

Sport Diver

\$1.95

THE JOURNAL OF SPORT DIVER

VOL. 2 / FOURTH QUARTER '78

**Learn The New
Language For Divers**

**The Navy's
Mark V
Helmet**

**Found:
The Ghost
Wreck Of
Isle Royale**

Tahiti Gallery • Richard Ellis Portfolio
Robert Marx Interview • Texas • Eat an Octopus
Shipwrecks and Treasure: The Legal Issue

SCUBAPRO SWEEPSTAKES

Everyone Who Enters The Scubapro Christmas Sweepstakes Is A Winner

1

FIRST PRIZE

A Datsun Lil Hustler

WIN your own set of scuba wheels. This economical Datsun Lil Hustler pick-up truck will take you to your favorite water hole in scuba style.

2

SECOND PRIZE

An all expense paid trip for two to Anthony's Key Resort

3

AND

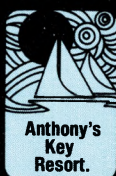
4

THIRD AND FOURTH PRIZES

A Tad Kayak

The Tad 4.2 meter Offshore Kayak gives you a simple new way to go down to those previously hard to get to places. Sporting a safe open cockpit design, positive flotation, moulded diving tank well and 6 cubic feet of water free storage, the Tad is light (45 lbs.) and durable (3 layers of hand laid fiberglass). It's new, it's exciting, it's simple and it works!

IMPORTANT NOTE: No purchase necessary. Enter as often as you like, but each entry must be accompanied by an official entry blank or your name and address clearly hand-printed on a blank 3x5 card. Scubapro 3105 E. Harcourt, Compton, CA 90221.



HOW TO ENTER

Simply visit your local participating Scubapro dealer and ask for a Scubapro Christmas Sweepstakes Entry Form, then deposit your entry in the Scubapro Display. Drawings will be held in January, 1979 at the DEMA Show. One entry per dealer visit. Deadline for entries is December 24, 1978. Void wherever prohibited or restricted by law. Scubapro employees or their agents are not eligible. Available only at participating Scubapro dealers.



Seven nights and six days of diving the sparkling clear waters off the island of Roatan, Honduras. Includes airfare, hotel, meals, dive boat, gear rental, air and a variety of sideline activities.

TAN airlines **SAHSA** airlines

Join the celebration. Gift a diver for Christmas with Scubapro.

EVERYBODY WINS

Get your
Free Floating
Key Chain



available only
at participating
Scubapro
Dealers.

Join In The Fun

Divers Sunday At



Come to IQ10, the Divers Convention, at the Disneyland Hotel, Nov. 9-12, 1978. On Sunday join the fun at Disneyland. Tickets available for all or part of IQ10. Questions? Give us a call (714) 783-1862.

November 12, 1978

Unlimited Tickets

Reduced Rates

**Write today for
IQ10 brochures and
Disneyland tickets**

Divers Sunday, 22809 Barton Rd., Box 630, Colton, CA 92324

Sport Diver

CONTENTS

VOL. 2 / FOURTH QUARTER '78

BAHAMAS

M.V. Impossible Dream

Richard H. Stewart

Cruise-diving returns and it's more comfortable than ever.

12



CONTROVERSE

Shipwrecks and Treasure: The Legal Issue

John Remon Wenzel

A top Washington lawyer examines the legal controversy.

29



THE EDIBLE SEA

An Octopus Occasion

Paul Hill

Are you ready for an octoburger steak?

45



CARIBBEAN

Grenada

C. LeRoy French

The southern Windward's most inviting island.

53



GALLERY

Tahiti

Carl Roessler

Gauguin and native languor in the South Pacific.

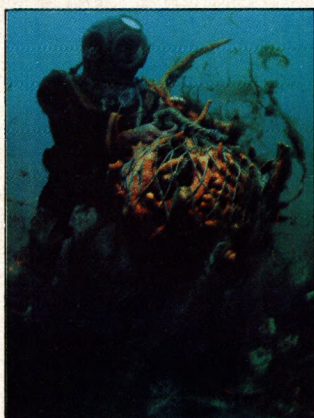
69



DEPARTMENTS

Editorial	4
Letters	6
Advertiser Directory	8
Washington Currents	25
New for '78	34
Beneath the Sea	40
Working Diver	60
In the News	79
Reviews	85
Underwater Photography	86
Instructor Notes	100

Cover: Sponge divers at Tarpon Springs, Florida bring in thousands of pounds of the creatures using old hard-hat gear. Photo by David Doubilet.



81

PROFILE

Robert Marx

Janice Prater

Robert Marx dreams big. He's already found America's second richest galleon.

95

THE STATES

An Afternoon's Delight

Steve Blount, Ned DeLoach

Panama City, Florida offers some of the best wrecks around the peninsula.

104

ART

Richard Ellis: Part II

Richard Ellis

A new portfolio of tropicals and gamefish.

108

COMMUNICATIONS

A New Language for Divers

Phil Trupp

If you can see your buddy, you can talk to him.

112

SALVAGING THE PAST

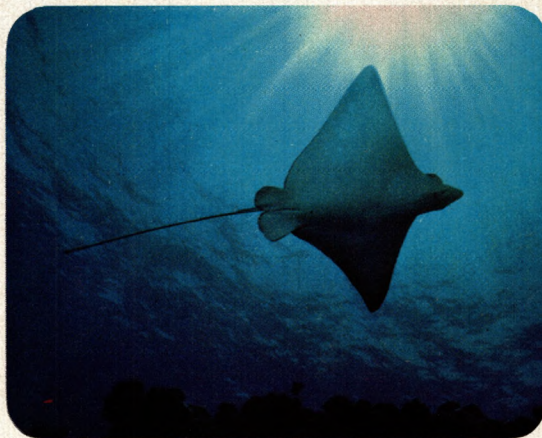
Ken Hafner, Thom Holder

The Ghost Wreck of Isle Royale is discovered by Lake Superior divers.

Richard H. Stewart	Publisher
Steve Blount	Editor
Kathy S. Bentley	Managing Editor
Ron Wilson	Art Director
Alton Cook/@	
Tom Nuijens	Assistant Art Directors
Norman Hamilton	Retail Director
Lloyd Shultz	Production Director
Heidi Holmes	Editorial Assistant
Vicki Knisley	Type Composition
Ned DeLoach, Robert Marx, Philip Trupp	Contributing Editors
Fred Bavendam, Rick Frehsee, Stephen Frink, Ken Hafner, B. L. Higdon, Carl Roessler, Bob Wallace	Contributing Photographers
David Abrahamson	Editorial Consultant
Saul Stone	Publishing Director

COPYRIGHT © 1978 by ZIFF-DAVIS PUBLISHING COMPANY. All rights reserved. Sport Diver, Fourth Quarter 1978, Volume 2, Number 4. Published quarterly by Ziff-Davis Publishing Company. Executive Offices at One Park Avenue, New York, N.Y. 10016. (212) 725-3500. Philip B. Korsant, President; Furman Hebb, Executive Vice President; Selwyn Taubman, Treasurer; Philip Sine, Secretary. POSTMASTER: Postal Forms 3579 and all correspondence should be addressed to Sport Diver, P.O. Box 2781, Boulder, CO 80323. One-year subscription for U.S. and possessions, \$12.00; Canada, \$15.00. All other countries, one-year subscription \$17.00, cash orders only, payable in U.S. currency. Application to mail at controlled circulation rate pending at Jacksonville, Florida.

World Wide Diving Adventures



Photos by Carl Roessler

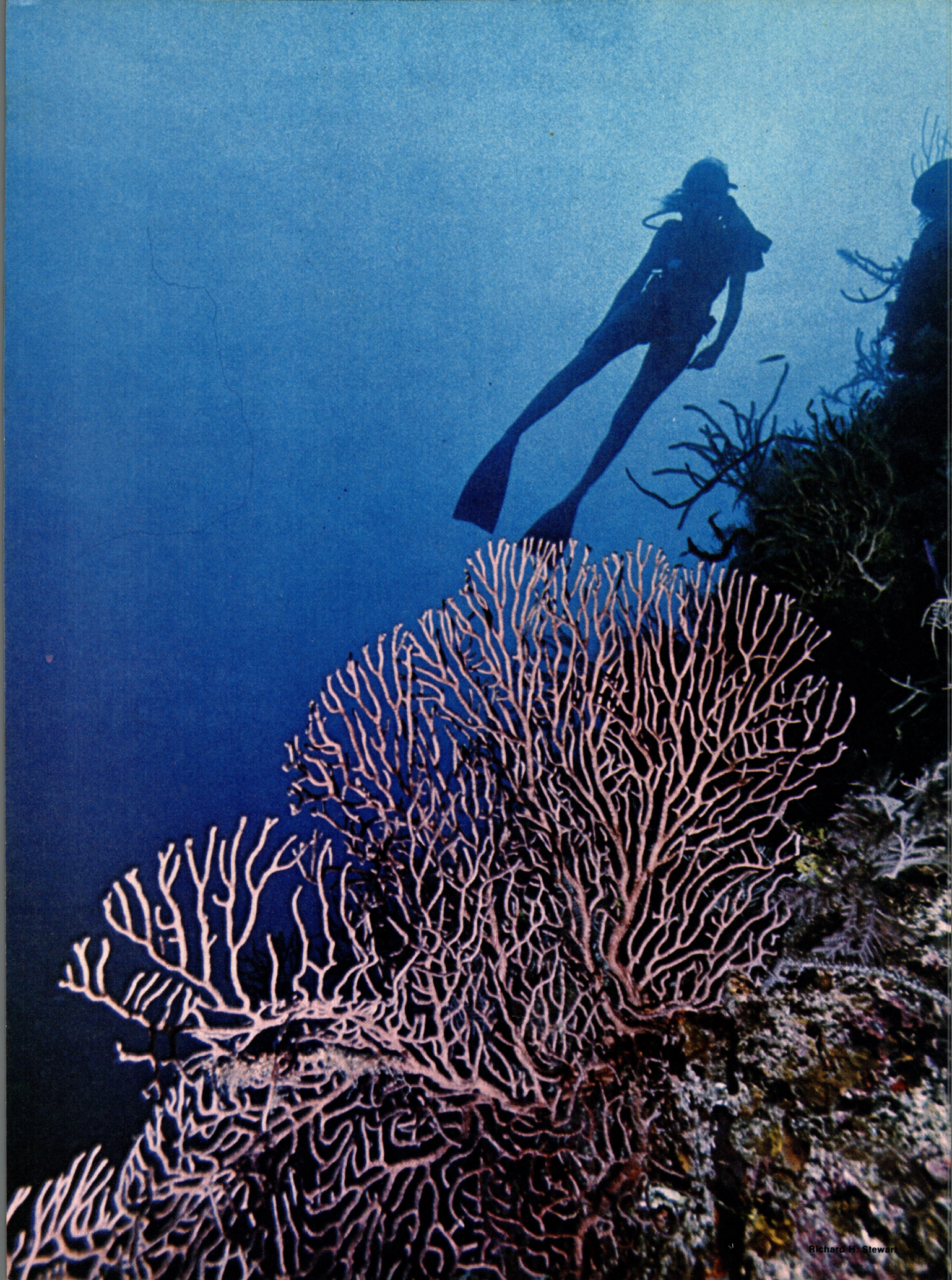


See & Sea
TRAVEL SERVICE, INC.

680 BEACH ST./SUITE 340/WHARF SIDE
SAN FRANCISCO, CALIFORNIA 94109
TELEPHONE (415) 771-0077

- Grand Cayman
- Micronesia — Truk and Ponape
- Cozumel, Mexico
- Australia
- Belize (British Honduras)
- Galapagos

- Philippines
- British Virgin Islands
- The Red Sea/Israel
- Fiji
- Maldives and Ceylon
- Great White Shark



Editorial

FROM THE PUBLISHER



This issue marks an important turning point for *Sport Diver*. This summer the magazine was acquired by Ziff-Davis Publishing Company, the country's largest producer of specialty publications. We're pleased to join this growing family that includes many popular magazines such as *Psychology Today*, *Popular Photography*, *Car and Driver*, *Boating*, *Yachting*, *Skiing*, *Flying*, *Travel Weekly*, *Stereo Review* and over thirty other titles.

This move assures you that Steve, Kathy, Alton, Norman and I will now be better able to bring you the most exciting and informative diving journal available.

This is the last issue which will be prepared in Jacksonville as we will be relocating our editorial and advertising offices to Miami. We'll be leaving a number of good friends and two of our art staff, Ron Wilson and Tom Nuijens. If you like the way *Sport Diver* looks, Ron and Tom were directly responsible. We will miss their efforts and friendship. Our new address is listed on the contents page and on page 6.

In this issue we have devoted more space to the controversy surrounding the salvage of historic shipwrecks. Jay Wenzel, Washington attorney

and chief legal counsel for NAUI, summarizes the legal status of historic salvage since the landmark decisions rendered this summer concerning the treasure of the *Senora Nuestra de Atocha*.

Another historic shipwreck, this one in Lake Superior, came to light this year. The *Kamloops*, a Canadian freighter missing for over 50 years was finally located off Isle Royale. Ken Hafner has documented the find with some of the finest photos to come off the deep wrecks.

On the other side of the world, the mysterious South Pacific yields to the probing eye and camera of Carl Roessler as he explores the virgin reefs around Tahiti.

Also in this issue you'll find out how to prepare a delicious meal from octopus, converse with author Robert Marx about his plans to sail a replica of a Phoenician ship from the Middle East to America, and learn how to speak a full vocabulary underwater — with your hands.

Sport Diver's goal is to bring you the finest in sport diving in an exciting and colorful format. To achieve this we will continue to seek out the novel and to probe the unfamiliar aspects of the ordinary while updating and refining our methods of presentation. In the coming

months look for an expanded and more complete travel section that will give you all the information you need to get where you want to go. The first of these special destination guides will cover the Bahamas and will appear in the First Quarter issue of 1979. We'll be devoting more space to underwater photography too, giving you the most current information on technique, concept and equipment.

We hope you'll enjoy this issue and the ones to come — we know we'll enjoy putting them together for you. From the staff of *Sport Diver*, we'd all like to wish you a happy holiday season.



Tom Nuijens

RH Stewart

LETTERS

As a reader of your magazine and other literature on the subject of sport diving, I find that an increasing number of divers are being certified and taking to the waters of this and other countries. With this increase in the diving community of our nation there should be a corresponding rise in the number of blacks and other minorities discovering the fun of diving. If this is so, are there enough minority divers to make a few pages in your magazine?

A few years back there was a television special on the exploration of the *Andrea Doria*. One of the divers was black. I enjoy reading your magazine as do friends of mine who also happen to be black and scuba divers. You have given us a lot to look forward to, please don't stop at this point.

Carl S. Perkins
Baltimore, MD

The population of divers is definitely changing. Sport Diver will of course keep pace with these changes, attempting to reflect an accurate representation of the diving community. Please see the photograph of divemaster Garfield McCartney on page 15 of our Volume 2, Second Quarter '78 issue. In that same issue were pictures of Japanese, Filipino and Cuban divers. Diving may be the perfect "equalizer" of the nationalities, at least visually. When you're down 60 feet looking at someone with full gear on, it's pretty difficult to tell what country they're from — everyone looks kind of green. Minorities are under-represented in diving but hopefully with the increasing popularity of the sport, that will change.

I read with interest your article in the Volume 2, Third Quarter '78 Washington Currents column entitled *No Wreck Ban: McKinney* written by Philip Trupp.

To begin with the very first quote that the government isn't going to stop sport wreck diving is absolutely true, but not because of Charles McKinney, but rather in spite of him. If you had attended the November 1977 Underwater Archaeological Conference at Key West you would have seen the true McKinney in action. He did everything but physically cart the treasure hunters off to jail on the spot. As a result of his overt threats to hobby divers and commercial treasure divers alike we formed a group called the

National Explorers & Collectors Association. This is a non-profit Florida corporation designed to protect the rights of its membership as regards the pursuit of exploring and collecting within the United States. A code of ethics has been established and educational articles regarding all phases of treasure hunting will be offered in our newsletter. One of the secondary purposes of this organization will be that of legislative watchdog. Any pieces of legislation which we feel threaten our membership in pursuit of their hobby will be pointed out in our publication.

As a result of the efforts of NECA and because so many divers are very upset by the government's tack, Mr. McKinney has had to back off from his original position (see Bill Barada's article in *Skin Diver Magazine* June, '78) because he realizes that there are many sport and hobby divers, people who can write letters to their elected officials in Washington, people who can and have given McKinney a very bad time. Anytime a small group of bureaucrats tries to usurp the freedoms of Americans they wind up the loser.

Treasure hunters (look around, there are a lot of us) are a very integral part of our democratic system. They are the ones who research, search for and find the shipwrecks in the first place. It is by the hard work and dedication of this free-enterprising group of individuals that history manifests itself to America in the form of books, magazine articles, television specials and last but not least through the various private shipwreck museums set up by treasure hunters.

So hasten ye not to applaud the transparent plan of one Charles McKinney and friends. Nor to the strong overtures made by W.A. "Sonny" Cockrell, Archaeologist for the Florida Division of Archives and Records Management, for his is the motivation of greed. He would as Federal District Judge William Mehrtens says "...covet the treasure (which) does not give (them) the right to take it."

Long ago I learned the true reason behind why some archaeologists insist on making more and more laws regarding treasure. Quite simply they wish to have a private hunting ground, and they can do it all with the people's money. Treasure hunters don't depend on the taxpayer to support them. Through the virtue of the free enterprise system they are self-supporting.

I have spent many years doing historical research on Spanish and English shipping. During the course of this time I've travelled through most of the major archives of Europe. I have never seen an archaeologist in the thousands of hours

continued page 8

Editorial contributions must be accompanied by return postage and will be handled with reasonable care; however, the publisher assumes no responsibility for return or safety of artwork, photographs or manuscripts.

Ziff-Davis Publishing Company
Editorial Offices
444 Brickell Avenue, Suite 250
Miami, Florida

Executive Offices
One Park Avenue
New York, New York 10016

Circulation
P.O. Box 2781
Boulder, Colorado 80323

Ziff-Davis Publishing Company
Philip B. Korsant
President

Furman Hebb
Executive Vice President

John R. Emery
Senior Vice President, Finance

Philip T. Hefferman
Senior Vice President

Edward D. Muhlfeld
Senior Vice President

Philip Sine
Senior Vice President

Lawrence Spom
Senior Vice President
Circulation and Marketing

Arthur W. Butzow
Vice President, Production

George E. Morrissey
Vice President

Sydney H. Rogers
Vice President

Sidney Holtz
Vice President

Albert S. Triana
Vice President

Paul H. Chook
Vice President

Edgar W. Hopper
Vice President

Robert N. Bavier, Jr.
Vice President

Selwyn Taubman
Treasurer

W. Bradford Briggs
Vice Chairman

ZIFF CORPORATION
William Ziff
Chairman

I. Martin Pompador
President

Hershel B. Sarbin
Executive Vice President

SUBSCRIPTION SERVICE: Postal Forms 3579 and all subscription correspondence should be addressed to Sport Diver, P.O. Box 2781, Boulder, Colorado 80323. Please allow at least eight weeks for change of address. Include your old address as well as new — enclosing, if possible, an address label from a recent issue.

SPORT DIVER: Fourth Quarter, 1978, Volume 2, Number 4. Published quarterly by Ziff-Davis Publishing Company. Executive Offices at One Park Avenue, New York, New York 10016; Editorial Offices at 444 Brickell Avenue, Miami, Florida — also publishers of Boating, Car and Driver, Cycle, Flying, Popular Electronics, Psychology Today, Skiing and Yachting. One-year subscription for U.S. and possessions, \$12.00, Canada, \$15.00. All other countries, one-year subscription rate \$17.00, cash orders only, payable in U.S. currency.

Material in this publication may not be reproduced in any form without permission. Requests for permission should be directed to Jerry Schneider, Rights and Permissions, Ziff-Davis Publishing Company, One Park Avenue, New York, New York 10016.

Chronosport, Inc.

The essence of time.



QUARTZ WATCHES



SEA QUARTZ 30

#3206 on tropic strap \$165.00
#3207 on steel bracelet \$190.00

The ideal choice for the active diver. Accurate to within 1 minute a year, pressure-proof to 30 atmospheres (1,000 feet) and designed for durability with a scratch-resistant mineral crystal, solid stainless steel case, one-way bezel, screw-down crown.
5 YEAR LIMITED GUARANTEE.

MINI QUARTZ 30

#3806 on tropic strap \$180.00
#3807 on steel bracelet \$205.00

A women's watch with all of the features of the men's model at a very reasonable price. The first quartz women's diving watch available. Very durable, attractive and easy to read.
5 YEAR LIMITED GUARANTEE.



WHY QUARTZ?

Quartz watches have fewer moving parts than self-winding watches and are therefore more rugged and reliable. The accuracy is many times greater than that of conventional watches.

WHY CHRONOSPORT?

Prompt and efficient service. Reliability. Durability. Accuracy. Styling. Value.

Available at all leading dive shops or direct from Chronosport.
Visa and Mastercharge orders welcomed.
Telephone (203) 853-9593.

Chronosport, Inc. 119 Rowayton Avenue Rowayton, Conn. 06853

SEA QUARTZ 30
MINI QUARTZ 30

Please send me:
☐ I enclose check or money order.
☐ Please charge my ☐ Visa ☐ Mastercharge.
☐ on tropic strap ☐ on steel bracelet
☐ on tropic strap ☐ on steel bracelet

Exp. date _____

Name _____
Address _____
City _____ State _____ Zip _____

LETTERS

continued from page 6

I've spent in this pursuit. If they are so interested in our cultural resources and history why aren't they doing some research of their own? The answer is quite simple, they would rather have someone else do it for them, then they can step in and take it away "in the name of the People." Sounds a bit like something out of the Kremlin.

I really didn't mean to go on and on like this but I do get carried away when I see some of our few remaining freedoms going down the old drain...so forgive my lengthy diatribe.

Jack Haskins
Vice President, NECA
Islamorada, FL

You're right Jack, Phil Trupp was not in Key West for the conference. I was. I saw Charles McKinney "in action" and what I saw was a reasonable man presenting a set of proposals. All of the shouting seemed to come from your side of the fence.

McKinney's proposals will have minimal impact on sport wreck diving. I didn't hear any threats, overt or otherwise, directed at hobbyists. McKinney wishes to prevent the wholesale plunder of cultural resources for profit that characterizes some treasure operations. I don't want to put a black hat on all treasure divers, but there are definitely some irresponsible individuals whose only real interest is in big bucks — not history.

As to the formation of NECA, I seem to remember that it was McKinney who formulated the idea, urging the salvors to form a lobbying group so they could more effectively participate in the legislative process.

Your NECA newsletter was a good idea. Unfortunately the first issue contained a number of inaccurate and erroneous statements. Deliberately misquoting a public official is totally irresponsible and I doubt that it will help your position with the folks in Washington, D.C.

*I read Bill Barada's article as well as the **Diver's World** piece. It seems funny that every time the government proposes something you don't like you trot out the American flag and suddenly everybody's eating apple pie and ice cream. Or you make references to "the Kremlin."*

Why don't you get serious and talk about the issues? Like the right of the other 200 million Americans who aren't

treasure hunters to see and benefit from the recovery of cultural artifacts. Or the right of sport divers to visit undisturbed, unutilized wreck sites.

McKinney's job is to protect the rights of those other Americans. His current proposals may not be the answer but he has repeatedly demonstrated his eagerness to meet with and listen to all interested parties.

*For a rational look at the problem and its legal history, read Jay Wenzel's **Shipwreck's and Treasure: Legal Issues** on page 29 of this issue.*

I am writing to you concerning the letter from Mr. Yoshida of Japan that appeared in your last issue. In it he requested articles about the Pacific and mentioned Okinawa.

I presently live on Okinawa and dive frequently and I'm sorry to report that the reef, for the most part, is dead here.

I am told that the extreme north end of the island has some life left but it is also blessed with tricky currents, so I've never been there. I have dived the Pacific and China Sea sides and have experienced some of the most boring diving ever. Nothing but rocks for miles.

The main reason for this is the mis-education of divers. I am told by a few "old hands" that it wasn't this bad before and that it gets worse every year. There are a great many diving schools on the island and they teach shell collecting. And of course everyone wants a trumpet, and we are now overrun with Crown-of-Thorns starfish. Why will they not teach their students diver responsibility?

Jeanette Davias
Okinawa

*There is a little life left around Okinawa (see **Sport Diver** Volume Two, Third Quarter '78). The demise of trumpets, one of the Crown-of-Thorns's natural enemies is certainly serious. The increasing population of the starfish is epidemic all over the Pacific, not just around Okinawa. One theory is that blasting carried out to construct deep water ports has spurred the population growth as Crown-of-Thorns can regenerate several starfish from the fragmented parts of one.*

There is most definitely a need for more emphasis on diver responsibility in all phases of scuba training. Our generation is the first to have the ability to completely destroy the underwater environment. It's up to us to be sure it doesn't happen and to be sure we don't contribute to the destruction.

continued page 10

INDEX TO ADVERTISERS Fourth Quarter 1978 Sport Diver Magazine

Adventure Cruises	128
Alfter Compressors	10
Anchor, Inc.	94
Aqua Dive	OB
Bahama Out Island	42
Barefoot Man	90
Belcher Industries	9
Benson Optical	36
Capt. Sandbar	36
Central Pacific Divers	78
Chronosport	7
Coastal School Diving	102
Creative Metals	94
Current Club	36
Dacor	66,67
Delta Boats	18
DEMA	49
Dive World	28
Divers Inst. Tech.	78
Dive Bonaire	90
Dodd Mead	38
EPOI	91
Feophoto	52,127
Galapago Inn	94
Hydrotech	42
Ikelite	93
Innerspace Research	80
Innovative Design	36
Lighthouse Reef	42
Lucayan/UNEXSO	27
Mariah	11
NASDS	100,111
National Scuba Repair	94
NAUI	1
Ocean Gallery	38
Pacific Sport Diving	128
PADI	103
PDIC	92
Planet Water	58
Robert Straight	44
Romora Bay/Omorka	42
Scubapro	IF
Scuba Tour Int.	80
Seaventure Cruises	24
Small Hope Bay	10
Spyglass Hill Resort	28
Stratton Studios	28
Sub Aqua Specialties	122
Sunshine Designs	36
Taino Beach	90
Undersea Environmentals	37
U.S. Nemrod	IB
Valentines Yacht Club	38
Vistar, Inc.	42
Walker's Cay/Omorka	44
W. C. Brown, Inc.	28
Westridge/Dolt	10
World Divers	122

Sport Diver Magazine
Advertising Office:
444 Brickell Avenue
Suite 250
Miami, Florida 33131
(305) 374-1300



A Tradition
of
Quality & Imagination

Supersling™
Special Limited Edition
24K Gold Plated

Spearshaft not included

Price — \$100.
Allow 6 week delivery.

Also our famous anodized Supersling™ — \$37.
Master Charge — Visa — Card Number and
expiration date needed.
Cashier Checks or Money Orders. No C.O.D.

BELCHER INDUSTRIES, INC.
P.O. Box 557412, Miami, Florida
33155 (305) 666-1015

See us at the D.E.M.A.
Show, Booth
No. 140

Super-Duper Dive Bags!

DOLT makes a complete line of high-quality Dive Bags

- Extremely durable 11 oz. waterproof Cordura nylon
- Triple stitched in all stress areas
- Ample capacity

DOLT equipment is the finest available — an ideal blend of function, durability & style.

We invite dealer inquiries.

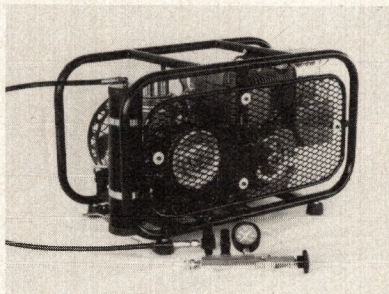


DOLT Equipment
West Ridge Manufacturing
11920 W. Olympic Boulevard
Los Angeles, CA 90064
(213) 820-4106

Support your local pro dive store.

Enjoy the convenience of filling your tanks, anywhere with:

ALFTER
 COMPRESSORS



- 4 CFM at 2250 PSI
- 4000 PSI capacity
- Gas and Electric
- Cartridge Filter System

FOR INFORMATION:

ALFTER Compressor Engineering
 561 S. Lilac / Rialto, CA 92376
 Phone: (714) 874-0149

PLAY IT AGAIN, SAM!



**FROM OUR CORAL FLATS
 TO OUR SHARP DROP-OFFS**
 Outrageously low individual and group dive packages write and ask us.

professional guides/free instruction - sailing windsurfing - lovely cabin on miles of beach patio bar - fishing - 15 minute flight daily from Nassau to Andros

**SMALL HOPE BAY LODGE
 ANDROS BARRIER REEF**

write for FREE BROCHURE and GOODIE COUPON:

"Small Hope SAM"
 P.O. Box N1131, Nassau, Bahamas
 Phone: 809-328-2015

LETTERS

continued from page 8

I would like to see you expand your departments and have more copy. How about an article unraveling the differences between the major certification agencies? Also how about something on how to rig your boat for open water diving, or how to catch and keep fish for your aquarium?

Warren B. Croke
 Jacksonville, FL

Have you been peeking in our futures file? All of that is on tap for next year, starting in January!

May I say that reading *Sport Diver* has really been a refreshing treat. After long searching for a different kind of diving magazine, the well documented articles and superb color photography of *Sport Diver* have really made a stimulating impact in representing the underwater world in its finest form. Here in Puerto Rico many divers have been awed by the fact that your pictures rival the real thing.

Congratulations on setting such a standard of excellence at this young stage of your publication's life.

Louis A. Salazar
 San Juan, PR

I am in charge of the Pediatric Clinic here at the Naval hospital on beautiful Guam. We also serve the children and teenagers of the many islands of Micronesia. In addition I am a member of the Undersea Medical Society and am charged with performing all physical exams for scuba trainees.

I am trying to brighten up our children's areas and I hope I might persuade you to part with an assortment of your underwater posters.

I already subscribe to *Sport Diver* and look forward to receiving it even more than my medical journals.

Don Coullahan, MD
 Naval Regional Medical Center
 Guam

You're very persuasive. The posters are on their way along with a complimentary subscription for the clinic patients. Perhaps some of the travel agents out there could send you a few posters as well. A series of Sport Diver posters depicting the covers of previous issues will be available early next year through your local pro dive store.

continued page 91

Set Your Spirits Soaring **FREE...**

with MARIAH, the exciting new magazine of outdoor fun and wilderness adventure.

And now you can get a **FREE COPY** of Mariah ... just by mailing in the coupon below!

If you're an "outdoor" person, or you'd like to be, Mariah is the perfect magazine for you. And here's why we'd like you to send in the coupon and join us today ...

- TO SHARE in the adventure and excitement of the world's wilderness challenges—from Skiing and Backpacking to Climbing, Sailing, Diving, Whitewater, Hang-gliding and more ...
- TO TAKE PART in some great expeditions yourself, whether they're weekend, week-long, or truly epic in scale!
- TO DISCOVER such beauty and quality, such outstanding writing and superb, award-winning photography, that the New York Times calls Mariah "a hip National Geographic." (Our readers say the photography alone is worth the price of admission!)
- TO GET THE INFORMATION YOU NEED for direct wilderness access. Mariah works closely with hundreds of independent outfitters around the world—so you get the contacts you need to get going and get in on the action!
- TO BE SURPRISED AND ENTERTAINED with the crisp, free-spirited, personal and authoritative features you'll find in every issue of Mariah.
- TO SAVE plenty of time and money with Mariah's helpful, expert advice ... like Larry Dean Olsen's survival column, Boyd Norton's column on wilderness photography, and the new performance ratings of field-tested equipment.

TRY MARIAH. The coupon below lets you get to know Mariah without risk and with no obligation ... so send in the coupon TODAY and get your free copy!

YES! Rush Me My FREE ISSUE of **MARIAH**

Send some outdoor fun and adventure my way ... send a free issue of Mariah.

If I like it, I'll subscribe at a special Introductory Rate: I'll receive 5 additional issues—6 in all—and I'll pay just \$9 (a full \$6.00 savings off the newsstand rate)!

If for any reason I don't like Mariah, all I have to do is write "cancel" across the invoice. I won't owe any money, and the copy of Mariah I received will be mine to keep.

Name _____

Address _____

City, State, and ZIP _____

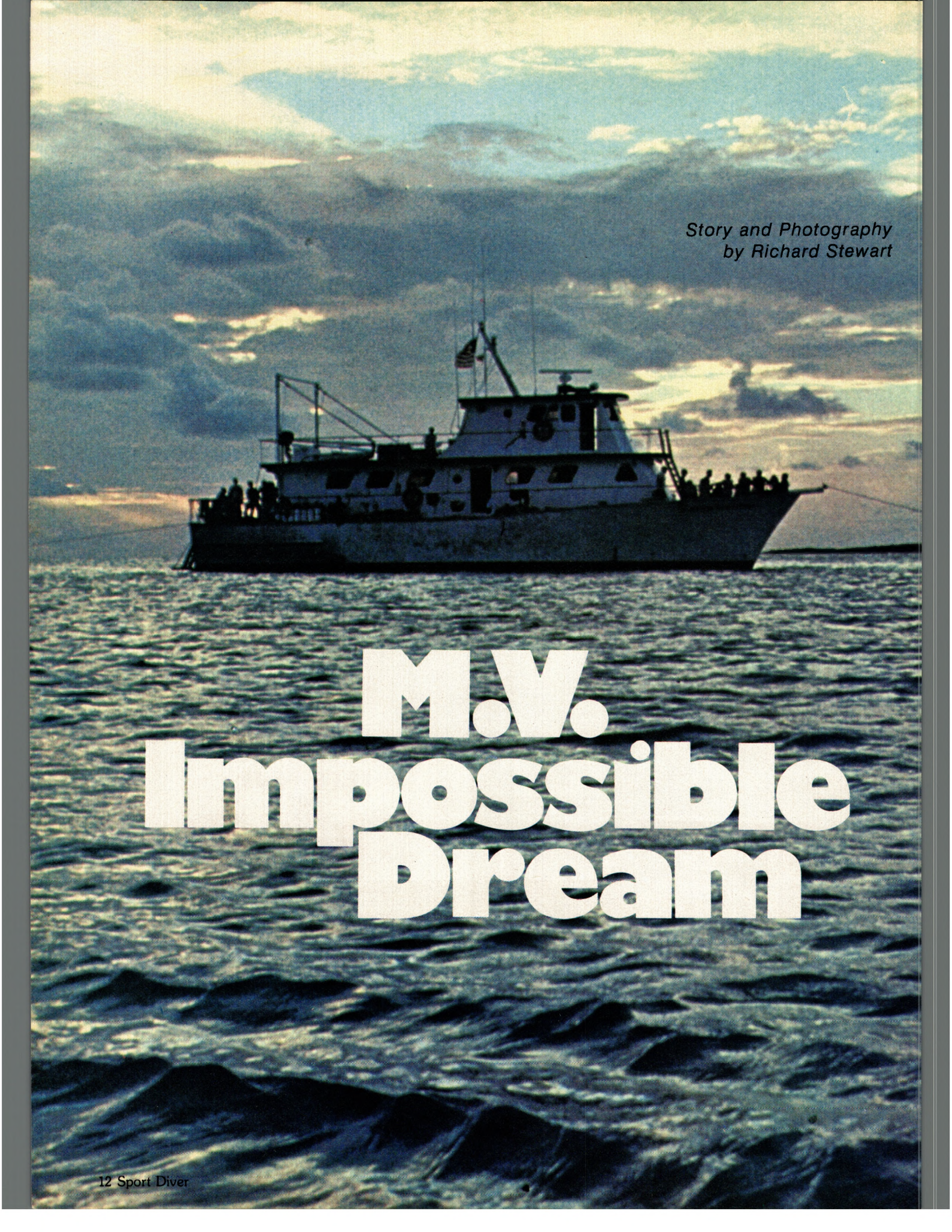
Mail to: Mariah Subscriber Services
P.O. Box 2690
Boulder, Colorado 80322

6140

Please allow 6-8 weeks for delivery. Rate applies for U.S. only.



Mariah P.O. Box 2690 Boulder, Colorado 80322

A large, dark-hulled ship with a white superstructure is positioned in the middle ground, sailing on a choppy sea. The ship has an American flag flying from its mast. Numerous people are visible on the deck, appearing as silhouettes against the bright sky. The sky is filled with dramatic, layered clouds, with a warm, golden light from the setting or rising sun breaking through near the horizon. The water in the foreground is dark and textured with small waves.

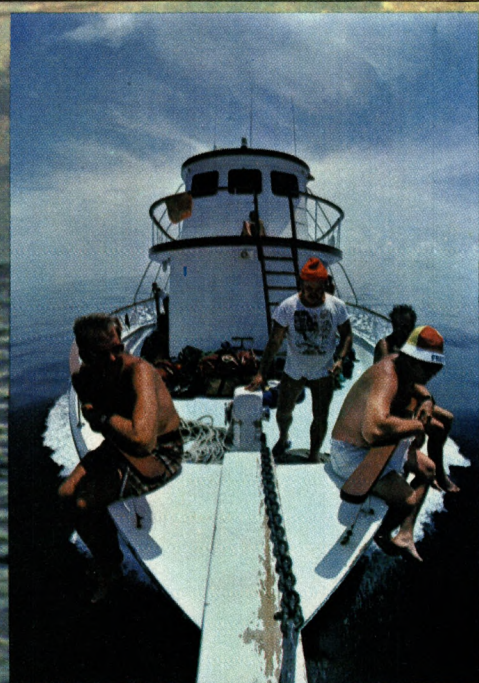
*Story and Photography
by Richard Stewart*

M.V. Impossible Dream

The deep basso profundo growl of the engines and the gentle sounds of the sea are accompanied by a cool spray breaking against the starboard. This atmosphere, quite different from the resort dock-boat-dive-dock hustle, is genuinely relaxing.

Diving cruises are not new, but they are being rediscovered by a generation of divers more accustomed to land-based operations. The first travelling divers were limited by a lack

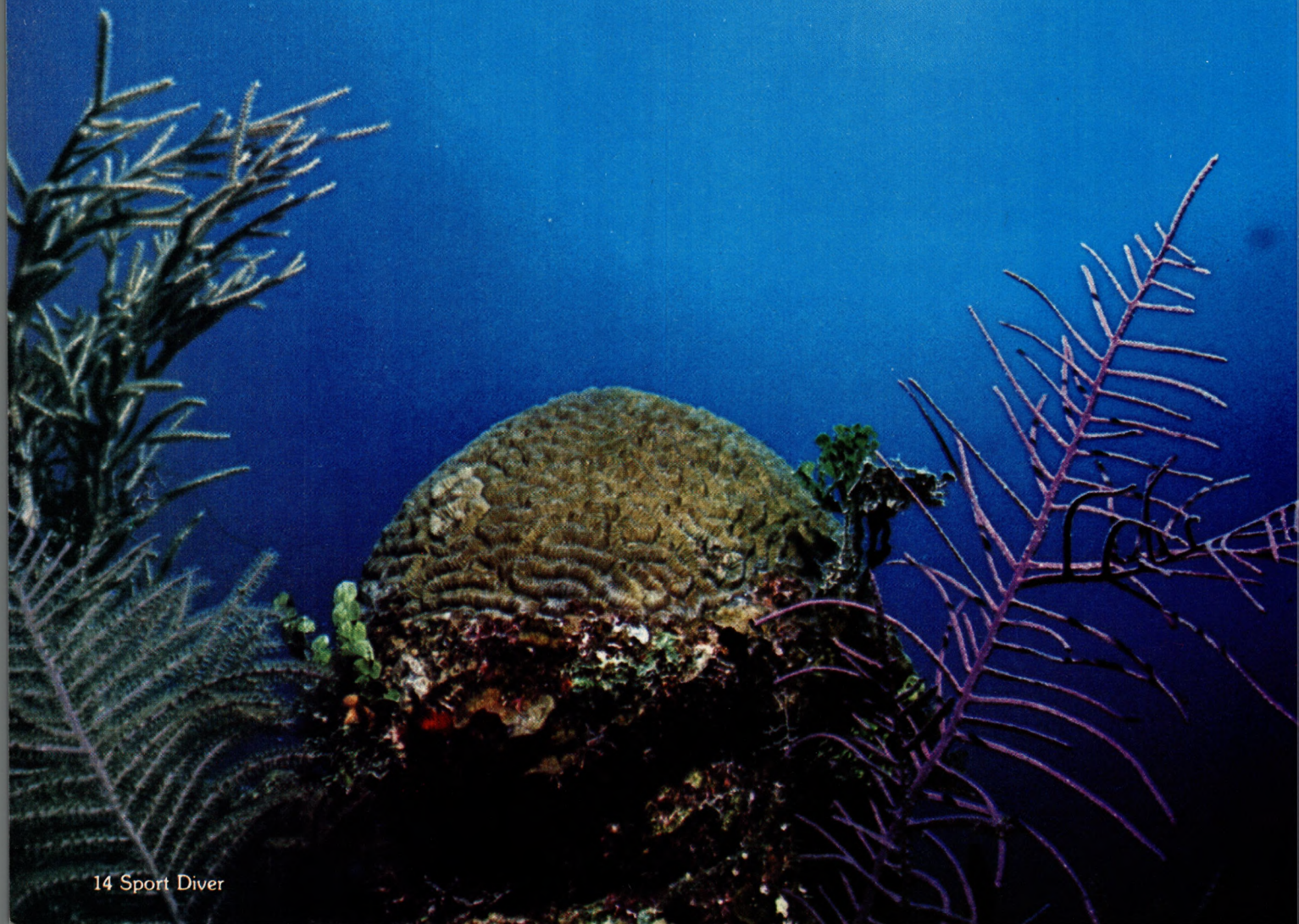
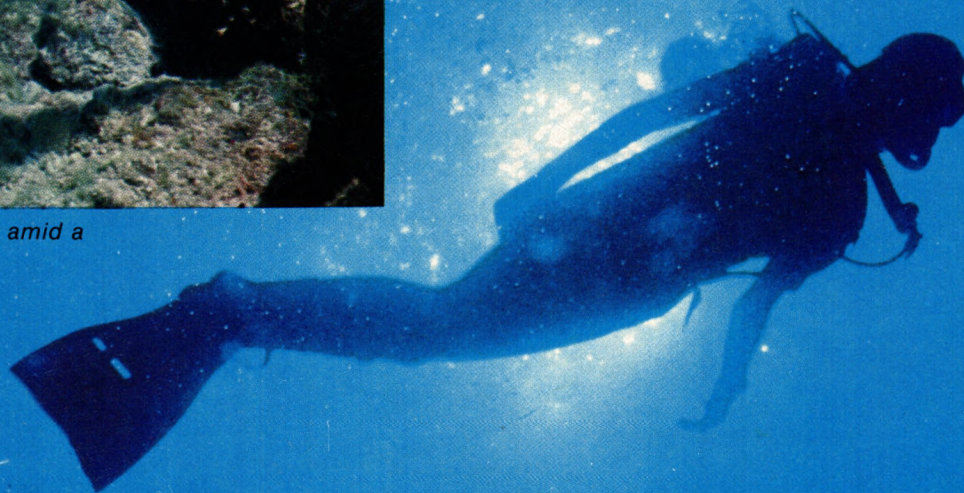
of land facilities. The cruising dive boat was really the only way to see a lot of the best Bahamas diving — until the surge of resort openings in the late 60's. As resorts grew more popular they offered conveniences not available on the converted fishing craft then in service for divers and resort diving took the spotlight. And while the resorts have many conveniences and abundant good diving, they normally can't offer trips to the really



The Impossible Dream cruises some of the Bahamas' best areas: Gingerbread Reef, the Bernes and Chub Cay.



A slim trumpetfish hovers amid a miniature forest of coral in the Berries.



virgin areas in the Out Islands.

Recently the Bahama Out Islands have become more accessible due to the growing fleet of specially-built dive charter boats. The newest of these is the 75-foot *M.V. Impossible Dream*, based out of Fort Lauderdale, which joins the *Highlander* and a number of smaller craft.

The two larger ships are part of a trend in dive-cruise vessels. Built from the keel up to carry divers, they bring resort-like comfort to the open ocean. Comfortable sleeping quarters, excellent food and good service are surrounded by incredible diving.

Although some 30,000 divers swarm the Bahamas each year, there are still places that have been visited by less than a dozen people. Most of these are accessible only by boat. These areas, if used wisely and protected by dive boat captains, will enchant thousands of future scuba enthusiasts.

The Bahamas have always been a popular destination due to their proximity to the U.S. Airfare is relatively inexpensive as are the costs of dive-cruise charters. In some cases, group charters can bring the price down to a few hundred dollars.

More important than the cost is the service and recreation you are buying. Bimini is less than 50 miles from Florida and the cruise boats can offer three to seven day cruises at affordable rates. Shorter trips are commonly run near Bimini, allowing groups a Thursday evening departure. They will wake up Friday anchored over an incredible wall. Of course, Bimini has several choice locations; among them the controversial "road blocks" which may

have been left by an ancient civilization and the *Sapona*, a concrete-hulled freighter.

Lengthier trips might include stops in Freeport, Bimini, Chub Cay or the Berries. When ample time is available a run to Andros Island, sight of the world's third largest barrier reef, is a possibility. The actual routes will vary from charter to charter, and most captains are amenable to the suggestions of charter group members.

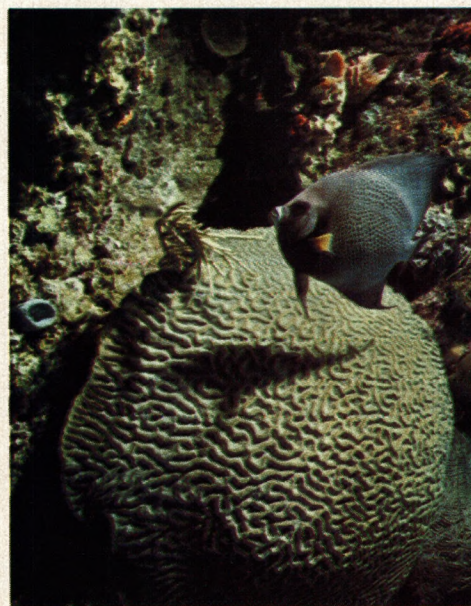
The comfort available on each vessel varies. The majority of the boats in service can easily handle six to ten. The *Impossible Dream* can handle 26 divers and the *Highlander* accommodates medium-sized groups.

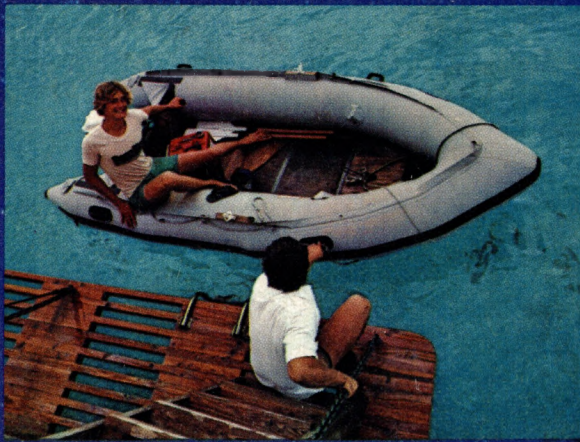
Unlike resort bookings which are nearly always available except during peak season, the date you wish to travel aboard a cruise boat may not be open. If you inquire several months in advance, there will nearly always be charter groups scheduled in which there are some openings. Of course for groups chartering an entire boat for a cruise there is normally no difficulty in setting up an agreeable date.

Meals are an important part of any ocean-going excursion and must be handled in a special way. The boats try not to serve greasy or acidic foods, especially before dives. The last thing you want is to munch down on something that's going to disagree with you underwater. The operators know that all of the passengers don't have iron stomachs and they plan accordingly. Fish remains one of the best all around meals while at sea. Although breakfast is always available for those who can handle it, a heavy meal before diving



The cockpit of the Impossible Dream is well equipped with the latest electronics for navigation and site location.





The inflatable chase boat is always ready whenever there are divers in the water.



definitely increases the possibility of cramps or other discomforts.

Safety aboard a dive cruise, as at any dive site, is of the utmost importance. Charter boats are subjected to an exhaustive series of inspections long before the first customer steps aboard. When the requirements are met, a Coast Guard permit is issued which must be displayed in full and open view. The permit assures you that the boat and its operator meet high standards designed to protect you.

For the safety of the divers, a chase boat will be kept in the water. Since the crew is usually busy helping people in and out of the water there are times when incidents could occur and not be immediately noticed. For this reason you should always be prepared. The direction of divers in the water should be towards the front of the boat, the direction from which the current is coming. If you have to surface for an emergency or just to get your bearings, you won't be caught drifting hundreds of feet behind the boat.

There are three very important pieces of equipment you should not dive without: A buoyancy compensator with automatic inflator, a snorkel for swimming through the waves and a whistle. The whistle is not to attract your buddy underwater. It is for attracting attention on the surface in the course of an extreme emergency. If for some reason you reach the surface breathless, the auto inflator can fill your BC even though your remaining air supply is less than 25 psi. In such a case you may not be able to muster an effective shout and waving arms are easily obstructed by the



The Bimini "road blocks" (below) have been attributed to the lost city of Atlantis. The huge stones are in 15 feet of water near shore.



constant motion of the swells. A whistle requires very little breath and its piercing sound carries well over long distances, even punching through background wind and wave noise.

This type of emergency seldom occurs on the well-run dive charter, but should it crop up, the chase boat is immediately set into action. The best thing to do is remain calm and relaxed and save your energy.

Having inspected your safety equipment, the next step is to put your personal gear in order. Check your regulator, second stages, gauges, mask, fins and BC for proper operation and be sure you have extra straps and O-rings for each piece of gear. Pack your dive and camera gear with enough T-shirts for the trip, film, sun tan lotion, sunscreen, motion-sickness pills, toiletries and some shorts. There are occasional shore visits so you may wish to include one set of semi-dress clothes and some extra dollars.

The most important thing to bring with you is the attitude that you're going to have a great

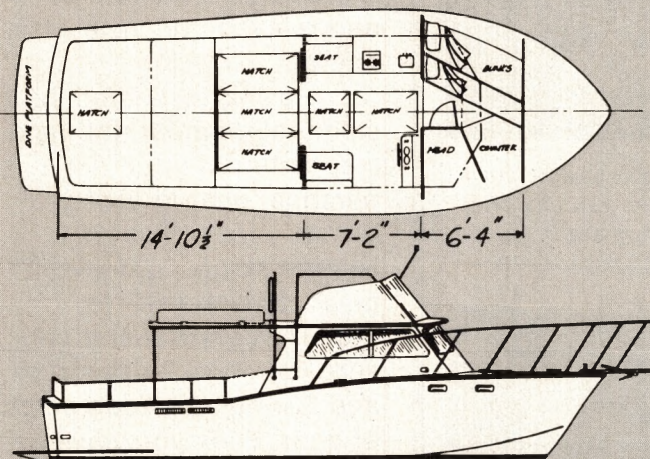
experience and see some new sites with a new or favorite group of people. By the end of the charter you'll find it hard to leave the ship and crew to return home. Don't be surprised if you find yourself sneaking looks in the help-wanted section of seaport newspapers or boating magazines.

The freedom of a Bahamas cruise is intoxicating; the lure of the islands a powerful narcotic. To experience both in the most relaxing way possible — there's really no substitute for the dive-cruise charter. ☺

OFFSHORE

by DELTA 34

Designed with
the Diver in mind

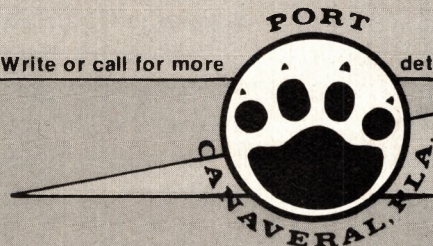


THE OFFSHORE 34 HAS A RUGGED FIBERGLASS HULL AND A FULL FIBERGLASS KEEL. IT CAN BE ORDERED WITH SINGLE OR TWIN DIESEL OR GAS ENGINES. OUR BOATS ARE BUILT ON A SEMI-CUSTOM BASIS OFFERING A FLUSH DECK. THE OFFSHORE 34 CAN BE CERTIFIED FOR 18 PASSENGERS AND CREW.

SPECS

LOA 34' 6"	Freeboard Fwd. 5' 6"
LWL 30'	Freeboard Aft 3' 4"
Beam 12' 8"	Headroom Fwd. 6' 2"
Draft 3' 6"	Headroom Salon 6' 4"

Write or call for more details and quotation.



DELTA BOAT WORKS
SCALLOP DR., PORT CANAVERAL
CAPE CANAVERAL, FL 32920
305-783-3536

Prices subject to change without notice.

Brazil Mystery Unfolds

Laurie Wolfe

On March 31, 1978 a mysterious aerosol drifted off the ocean into the Brazilian village of Hermenegildo, north of the Uruguayan border. Shellfish along shore died, as did many horses, dogs, cats, chickens and rabbits. Children attending a school near the beach were hospitalized. As the cloud spread over 350 miles of coastline, people sought medical attention for burning eyes, throats and lungs induced by the substance.

Brazilian officials stated the cause was obviously red tide. Their preliminary tests of water samples revealed *Trichodesmium oscillatoria* and *Gymnodinium breve*, a blue-green algae and dinoflagellate that cause red tide. Aware of the effects publicity might have on their fishing markets and wanting other opinions, the government asked the United States for help. Labs of the Center for Disease Control in Atlanta found no evidence of *Gymnodinium breve* in samples the Brazilians provided. And, they pointed out, *Trichodesmium* could not be blamed for the death of animals as it is non-toxic, nor the aerosol-induced irritations suffered by humans. The Food and Drug Administration found evidence of paralytic shellfish poisoning, introducing a new suspect organism, *Gonyaulax*. The confusion had just begun.

Independent scientists at the Base Oceanografica Atlantica, a division of the Universidade do Rio Grande, opposed the government theory. Young and enthusiastic, these men and women sampled during the crucial first days of the phenomenon. Their conclusions were that the dinoflagellate and blue-green algae counts were normal for that time of year.

The last hypothesis, supported by local ecologists, was the most frightening; chemicals dumped or accidentally spilled into the ocean. Two Brazilian government ships were suspected. The *Itapage* had jettisoned a cargo of pesticide off Santos in February, 1977. Yet it was unlikely that chemicals diluted over a year's time would still be strong enough to affect an area so far south. The second ship, the *Taquari*, had run aground off Cabo Polonio, Uruguay, in 1971. She too had a cargo of chemicals. The ship had finally broken apart in a storm just one day before the Hermenegildo phenomenon began. In her collapse, she could have spewed out the chemical cargo. I obtained a manifest from the shippers and chemists assured me that no chemicals listed could have produced the disaster. Yet stories circulated in newspapers of possible lethal contraband, chemical warfare agents or even Agent Orange, that would not have been on the manifest and could never be traced. Perhaps frightened by this publicity, the Uruguayan government refused to let Brazilian divers survey the *Taquari* wreck.

What impressed researchers and independent observers alike about this incident was how little we know about environmental systems and our effects on them.

In that sense, the events in southern Brazil are a tragedy — but they are also a challenge. At least in part, their cause increasingly seems to be red tide. Red tides have always occurred, but their frequency and size seems to be growing. Because of its unusual nature we have to ask, have we had some unwitting hand in promoting a red tide of such scope? Did the rupture of the chemical cargo help create an environment conducive to it? Was pollution a factor? If so should an increasingly polluted world anticipate more disasters, more environmental systems gone awry? What combination of conditions lend themselves to a red tide bloom and what can we do to guard against them? The challenge is to learn.

Courtesy of the Cousteau Society

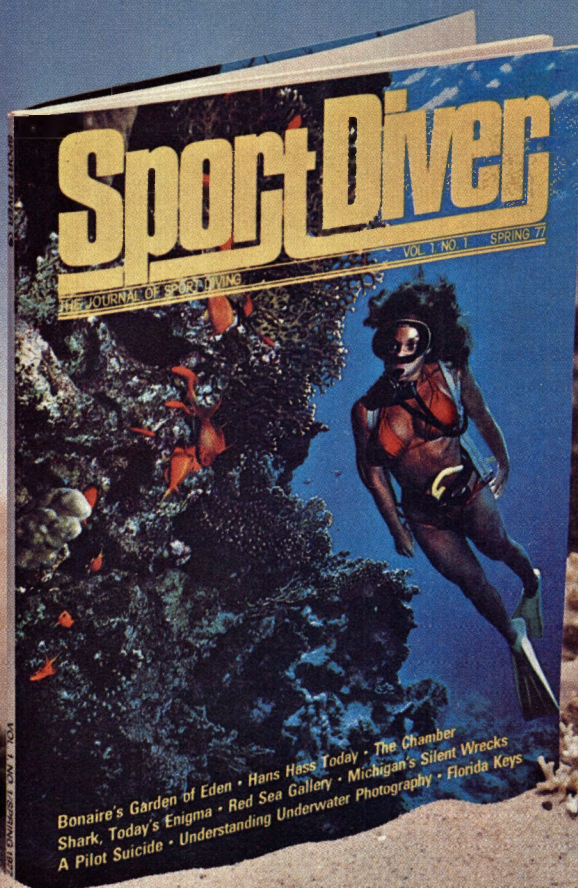
Collector's Item

Hailed as the world's most exciting journal for divers, the first issue of SPORT DIVER has already become a collector's item.

Because of the unprecedented demand for this Spring 1977 issue, we've made more copies available for all you serious divers who missed it in the dive store. Now you can order yours at a saving — just mail the coupon below.

A word to the wise: Don't delay — order all the back issues you need to complete your SPORT DIVER collection right away. (This offer is good only as long as the supply lasts.) Then you can plan your underwater adventures with

the help of a complete, up-to-date library of the world's most informative, beautifully illustrated diving magazine.



MAIL TO

Sport Diver

P.O. Box 2781
Boulder, Colorado 80322

☐ **YES!** Send me a copy of SPORT DIVER'S Premier issue — Spring 1977, for which I enclose \$2.00.

Also send the following SPORT DIVER back issues at \$2.25 each — full payment is enclosed.

☐ Summer 1977 ☐ 1st Quarter 1978 ☐ 2nd Quarter 1978 ☐ 3rd Quarter 1978

☐ Send me one year (four issues) of SPORT DIVER for just \$9.95. That's 17% off the regular subscription rate of \$12.00. I enclose full payment.

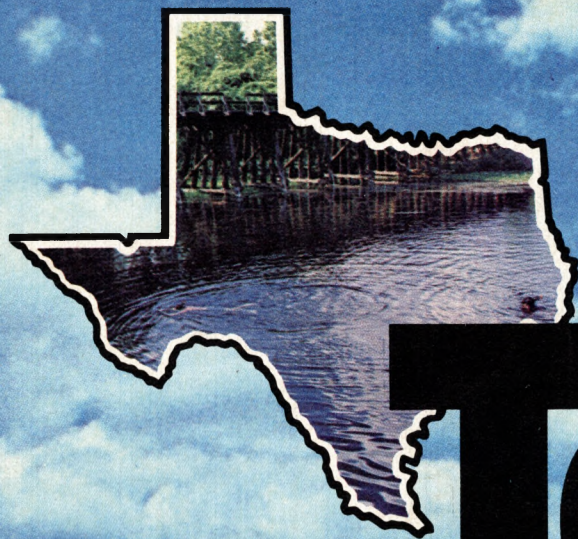
☐ New Subscription
☐ Renewal

Mr./Mrs./Ms. _____ (please print full name)

Address _____ Apt. _____

City _____ State _____ Zip _____

Foreign subscription postage: Add \$3 for Canada. Add \$5 (payment in U.S. currency only) for other countries outside U.S. and possessions. Please allow 60 to 90 days for delivery of first issue.



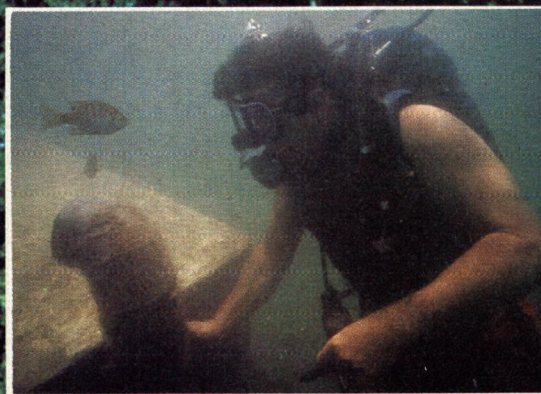
Texas



Hill Country Diving

Article and photography
by Ned DeLoach

Like everything else in Texas, the enthusiasm for diving is big. On any given weekend large groups of divers can be spotted as they don their equipment on the banks of one of the state's many clear-water rivers or beautiful lakes. Red and white flags flap from floating tire tubes, marking the location of underwater activity along the irregular shorelines of Lake Travis and





(Previous page) Lake Travis, in central Texas, attracts many divers each weekend. Water sports are the focus of activity on the Comal River in New Braunfels (left).

Canyon Lake, the two most popular diving sites in central Texas.

Water sports have always been popular with Texans. Recreational boating, fishing and water skiing are a way of life in a state that encompasses hundreds of man-made lakes and navigable rivers. Years back when sport diving first appeared, Texans eagerly welcomed the new water activity. Soon divers were exploring their local rivers, lakes and springs. The hill country around Austin became the hub of their activities due to its wide variety of freshwater diving, ranging from large, deep lakes to clear, spring-fed rivers filled with fish and aquatic plant life.

Lake Travis, one of the deepest and clearest lakes in the state, is the last body of water in a seven lake chain that snakes its way through rugged central Texas hill country, ending at the Mansfield Dam 15 miles northwest of Austin. Travis is 65 miles long and has over 270 miles of shoreline, although it is no wider than 3 miles at its widest point. The best sites for diving are near Austin where the lake is deepest and the water has a chance to settle out. Visibility ranges from 5 to 40 feet depending on several conditions; these include the depth of the lake, which varies according to the year's rainfall and the irrigation needs of rice farmers along the Colorado River. The wash from heavy boat traffic can also reduce visibility along the shoreline. Divers usually beat this problem by arriving at the lake early in the day before many of the boaters get started. The lake is used for diving year round with temperatures varying from the 80's in the summer to the upper 40's in January. Like other

inland bodies of water Lake Travis has a thermocline beginning at a depth of 40 feet. The temperature in this lower layer of water is usually 8 to 12 degrees below that of the surface layer. Entering the thermocline is almost as shocking as having someone suddenly turn on cold water during a hot shower. Divers planning deeper dives in the lakes should gear up with a wet suit in anticipation of the cool thermocline layer. Sometimes it is difficult to convince a novice that a wet suit will be needed while he gears up in shallow, warm surface water, but usually after one chilling experience he will be seen climbing into a suit before the next deep dive.

A popular location on the lake is the LCRA Park (Lower Colorado River Authority) near Mansfield Dam. The park offers ample camping facilities with a bathhouse, fresh water and a boat ramp. A large cove has been barred to boat traffic and fishermen for the protection of divers and swimmers. There is excellent diving along the cove's underwater cliff that plunges sharply to 70 feet. Divers can spend a whole day exploring the undercuts and ledges of the cliff and large schools of panfish can be attracted by opening a few clams with a knife. Many of the fish are so tame they can be enticed to eat out of your hand.

The Hughes County Park, located between St. Luke's Church and Mansfield Dam, is frequently visited by divers because of the lack of boating activity there. To reach the water, gear must be carried down a steep, rocky path. A wall of rock slopes offshore at a 45 degree angle to a depth of 100 feet.

Windy Point, just across from the dam, is a large finger of land that juts out into the water. Easy access and deep undercuts in the face of an underwater cliff make it popular. In the lake, on the north side of the point, is a large pecan grove that was inundated years ago when the lake was formed. Many of the huge trees remain standing and their branches reach up from the depths.

Another favorite dive site just happens to be along the cliff out from Hippy Hollow, the lake's only nude bathing area. A few divers have reported that underwater orientation in this section of the lake can be a bit confusing at times because they have often seen bottom whether looking up or down!

The clearest water in Travis is usually found just off Rattlesnake Island, a 3 mile boat ride from Mansfield Dam. The wakes of passing boats have little effect on the rocky shoreline of the island contributing to the clarity. Here the depths gradually slope down to 130 feet before tapering off to a flat bottom.

Canyon Lake, located 70 miles southwest of Austin, is another excellent lake for diving. Visibility averages around 15 feet during much of the year. Boating and skiing are not as common and this helps to keep the visibility good even during the weekends. The underwater cliff at North Park, located near the dam, is a sheer drop of nearly 60 feet. Numerous undercuts and overhangs are spotted along the wall. Maximum depth in the area is around 90 feet. The submerged cliff at Comal Park is a favorite of many local divers. The rock wall gradually angles out into the lake to a depth of 130 feet.

Both lakes have an abundance of fish life and lake spearfishing is challenging. State law permits only so-called rough fish to be taken by spear (carp, buffalo, gar, Rio Grande perch and goldfish). Large carp and buffalo up to 30 pounds are taken daily. When prepared and barbequed correctly, both fish are delicious.

The prevalent hazards of lake diving are the boat traffic, trotlines, and low visibility. Local divers are very wary of boats buzzing around just overhead

and always protect themselves by trailing a line to a float, usually a tire tube that supports the divers down flag. Trotlines should be avoided like the plague. Dangling hooks seem to have a knack for reaching out and grabbing unsuspecting divers, so a sharp knife should always be carried to help free a diver from accidental entanglement. Low water visibility requires close buddy contact at all times. A careless diver can be lost from his partner in only a few seconds requiring both to surface before contact can be made again.

Two beautiful spring-fed rivers located south of Austin offer clear, warm water diving year round. The German settlement of New Braunfels is nestled in the picturesque, green Texas foothills. The peaceful and friendly atmosphere of the region, combined with the very agreeable climate, helps create one of the southwest's most enjoyable vacation centers. Recreational activities center around the cool, clear waters of the Comal River which runs through the middle of town. The water of the river remains a constant 75 degrees all year long and provides pleasant diving even during cold winter months. The river starts at the headspring of Landa Park and flows for 3 miles to the Guadalupe River. The headspring consists of several large sand boils in a shallow spring basin. The depth of the river averages 8 to 10 feet, but several deeper holes can be found down the run. The visibility stays about

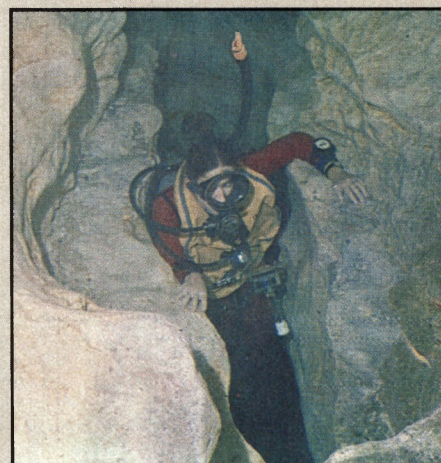
30 feet, but is better in the winter months when fewer swimmers are present. Drifting downstream with the flow, choose either snorkel or scuba equipment to explore the interesting underwater scenery. Perch, bass, turtles and crayfish are easily found hidden among the aquatic plants that flourish in the white sand of the river bed.

North of New Braunfels is the town of San Marcos which boasts the clear water of the San Marcos River. The famous tourist attraction of Aquarena Springs is built around the headsprings of the river. Divers are not allowed in the spring basin, but can find plenty of good diving in the river run. Artifact hunters lazily drift downstream while carefully fanning the sand with their hands to uncover hidden flint arrow points. Large collections of artifacts recovered from the river are on display in several locations around town.

Jacob's Well Spring, 48 miles from Austin near the town of Wimberly, is an excellent cave diving experience for qualified cave divers. The spring is on the property of the Woodcreek Hillcountry Resort and is restricted to certified cave divers who must be approved by the property owners. Four cubic feet of water per second gushes to the surface from the deep Edwards-Trinity Plateau Aquifer, filling Cypress Creek with sparkling, clear water. The creek winds its way along a limestone cliff to the Blanco River. The upper section of the cave is a shaft 12

to 15 feet in diameter that drops vertically for 60 feet. Most divers pause at this level to look up through the clear water to the cavern entrance above. The sight of the white-fleeced clouds drifting in the blue Texas sky from 60 feet underwater is a memorable experience. At this point the cave widens and angles back under the cliff to an impassable restriction at a depth of 80 feet. A big plus in a Jacob's Well dive is the absence of silt in the cave. This eliminates one of the most common hazards in cavern diving. Several dive teams can explore the cave in the same afternoon without a major loss of visibility.

Clear lakes, rivers and springs set in green, rolling countryside combined with the legendary hospitality of Texas offer an excellent locale for a rewarding inland diving vacation. ☪



Sheck Exley

Karen Exley explores the interior of Jacob's Well (below and upper right), a cave-spring dive. Similar to many Florida springs, the Well (right) emerges from the native bedrock, producing a cool, clear water run.



Sheck Exley



Just Call Him Rover

The octopus, once the scourge of maritime folklore and Japanese horror movies, is finding a place in American society — as a house pet in saltwater tanks.

A house pet?

"Sure," states Dr. Ronald F. Thomas, writing in the upcoming issue of *Sea Frontiers*, a magazine published by the International Oceanographic Foundation which owns and operates Planet Ocean, a marine-science attraction by Key Biscayne.

"A 1 to 1½ foot octopus can live quite nicely in a well-aerated, 20-gallon saltwater tank. However, the tank must have a tight-fitting top to keep the pet from climbing out," he warns.

Thomas also recommends avoiding the ones which grow to three feet or more. And the deadly blue-ringed Australian octopus is poisonous so it, too, would be a bad choice for a house pet.

According to Thomas, the octopus is enjoying a growing popularity in saltwater tanks because of the "universal folklore associated with it" and the creature's apparent "high degree of intelligence." Dr. Thomas is a marine biologist who specialized in the study of invertebrates while at the University of

Miami's Rosenstiel School of Marine and Atmospheric Sciences.

Food can be a problem if the local pet shop or bait supply store doesn't stock live fiddler crabs. But, as a last resort, "frozen seafood can be tried," Dr. Thomas adds, encouragingly.

In caring for baby octopuses in a tank, Dr. Thomas discovered a new use for Astro-Turf. It seems that the octopus enjoyed floating on the synthetic grass, enabling it to rise to the surface of the water for the "necessary task of hand-feeding."

Dry Suit Evaluation

Naval Coastal Systems Laboratory tests are in progress in the Hydrospace Lab in Panama City, Florida, to determine insulation characteristics of commercially available dry suits.

What makes this test series so remarkable is the test model, a copper man on loan from the U.S. Army Research Institute of Environmental Medicine.

Wearing a custom tailored suit/underwear ensemble, the copper mannequin is submerged to neck level in water which is maintained at 70° F. When the mannequin is stabilized, air, helium or carbon dioxide is used as the hyperbaric

gas. Six pressures are applied; only selected combinations of suits and undergarments at predetermined pressures and gas composition are tested in lieu of all possible combinations.

NASDS Washington Office

The National Association of Scuba Diving Schools, Inc. has opened a new office in the heart of the governmental agency district in Washington, D.C.

John Gaffney, Executive Director of NASDS, feels that the opening of the office in this location will help protect the diving industry from governmental agencies that might unknowingly harm the professional diving store/schools through prohibitive legislation.

Gaffney stated that, "These last few years have seen more and more governmental activity in the scuba diving business. It is no longer a luxury for our industry to have people that are concerned about the diving industry and help us on a part-time basis. It is vital that we have someone representing at least the NASDS member schools on a day-to-day basis."

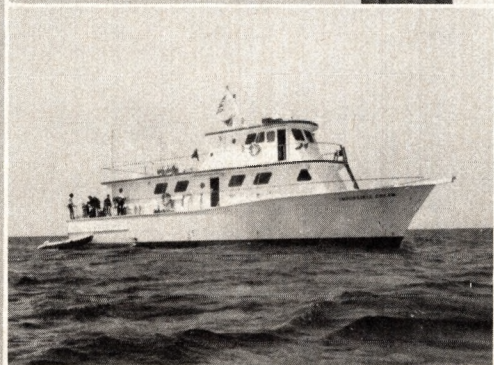
The office will not handle regular store business but will involve its staff with public relations work with the various governmental agencies.

DIVE WITH US ABOARD THE M/V IMPOSSIBLE DREAM

SOLAS CERT. FOR
SHORT INTERNATIONAL
VOYAGES. (BAHAMA
AREA) HOME PORT:
WEST PALM BEACH

FEATURING:

3 Meals a day - Free air -
Sleeping area fully air
conditioned - Bunks - 78"x 54"
(doubles 9) 78"x 30" (singles
10) - 2 Chase Boats - Large
dive platform - Rentals - Dive
camera, fishing gear, photo lab.



75'x 23' COAST GUARD APPROVED DIVE BOAT

TRIPS: 4-5-6 DAYS
FOR FURTHER
INFORMATION AND
CURRENT PRICES WRITE:

SEAVENTURE INT'L. INC.
P.O. Box 1262
Melbourne, Florida 32901
or call 305-723-9312





by
Philip
Trupp



WASHINGTON CURRENTS

U-352 — Will It Sink Again?

Now comes the tale of the scuba diving Senator and the German submarine U-352, down in 110 feet of water off the coast of North Carolina.

Diving Senator Lowell P. Weicker (R., Conn.) in July learned the sub may be a time bomb hazardous to the health of any diver who cares to spin the arming prop of a live torpedo projecting through a forward tube or fondle the live 88 millimeter shells which pepper the area.

Weicker went to North Carolina to see for himself and dove the sub with his resident oceans expert, Bob Wicklund. It was Wicklund who first got the tip from Carolina salvage divers that the wreck was waiting to blow sky high.

What they saw on the bottom was enough to convince Weicker to call in the Navy for an expert second opinion.

Navy divers are working on a detailed report. Early indications hint that they will recommend dynamiting the wreck. If so, Weicker is expected to strongly oppose the recommendation. He wants to keep the U-352 intact for several reasons.

For starters, the German government still holds legal jurisdiction. When the sub was sunk during a World War II encounter, many of its hands went down with the ship, which makes it a recognized "war memorial". Senators just don't go around blasting war memorials — even if the ever-amazing "ghoul divers of Carolina" do collect human skulls!

Also, the sub is and continues to be an endless source of enjoyment for a generation of Atlantic wreck divers and a fair bit of income for charter boat captains. Destruction would certainly be felt by these people, as well as by conservationists who say the wreck is a magnificent artificial reef.

Dynamiting may be pointless. After all, experienced wreck divers see live ammo on virtually all World War II wrecks. They know better than to handle it, let alone spin the arming mechanisms of a live torpedo.

Still, Weicker remains convinced that the potential for trouble is there.

Within days after returning to Washington from North Carolina his office was busily arranging a press conference to talk about it. Anne Haskell, his bright press secretary, said the Senator didn't want to alarm anyone, "but he just doesn't want to take any chances on you guys getting hurt." Not every diver is experienced, she said, and some do take risks.

But the press conference failed to materialize. Aware on further reflection that the U-352 might explode politically in his lap, Weicker decided to wait for the Navy's report, which is due this year.

"We want to study the options before we say anything definite," Wicklund told us.

But for sport divers there's only one best option — save the U-352!

Pregnant Divers — Don't Do It Deeper!

Back in 1908, Professor Haldane, father of modern dive tables, discovered bubbles in the fetuses of goats subjected to severe decompression sickness. Ever since then we've been asking if diving is harmful to pregnant women. The answer appears to be YES.

According to physiologist William Fife, a pregnant diver who descends deeper than 60 feet may run the risk of harming her unborn children — perhaps fatally.

Working under a federally funded Sea Grant program, Dr. Fife told Washington that tests on sheep in a pressure chamber indicates it is "probably" safe to make shallow dives to 60 feet. But, he warned, even a standard no-decompression dive to 100 feet poses a risk to the unborn infant.

Chamber tests equal to a 100-foot dive for 25 minutes caused serious but treatable illness in the sheep fetus, Fife said.

His findings raise the questions about diving by women who may not know they're pregnant or by women who are pregnant but believe they aren't sufficiently advanced to curtail diving activities.

Sensing instruments were surgically implanted around the umbilical arteries of pregnant sheep which allowed fetal blood flow to be monitored for nitrogen bubbles. After the test dives, the animals were recompressed and allowed a slower ascent, providing treatment for decompression sickness in the fetus.

The fetuses of the sheep showed a much higher susceptibility to bends than did the mothers. In the 100-foot test dives bubbles in the fetal circulation were so massive that the fetuses probably would have died had they not been promptly treated — and Fife points out

that sheep and goats are more resistant to bends than humans.

Fife said women should be very cautious, "because at some depth between 60 and 100 feet a dive normally considered safe may be lethal to the fetus."

Fife's report is on file in Washington. Jim Elliott at NOAA Public Affairs can help you find out more about it. Call at 202-634-4033.

New Wave At OSHA — Promise of Sanity

Science and research divers are in for a break. OSHA, the federal health and safety organization which last year almost put sport diving instructors out of business, is apparently willing to modify its standards for scientific diving.

The modifications will be in line with standards now on the drawing board of Cal-OSHA, the California safety and health unit which has refused to adopt the more restrictive federal guidelines.

At present, many of the nation's research divers are bound by federal OSHA's safety codes which are so restrictive they threaten to block important programs by institutions such as Scripps and Woods Hole.

Cal-OSHA's rules are far less severe and a lot more realistic. For example, Cal-OSHA will allow standard air diving to 190 feet instead of the 130 feet now allowed by the federal government. BCs won't need to be worn over dry suits, and on-site chamber requirements will be more liberal. Federal OSHA requires an on-site chamber for all dives to 100 feet or more. The economics of this seriously hinders programs on limited budgets.

Federal OSHA is reported willing to make the modifications suggested by Cal-OSHA because, according to several Washington Watchers, it is now aware of the unrealistically tough nature of its earlier rules.

continued next page

Federal OSHA hasn't decided on how to handle the job of modification. We may be in for full public hearings or the changes may be written via the administrative route.

Diving scientists are hoping to avoid more lengthy public hearings and are pushing for quick administrative action.

Play It Again, Uncle Sam

Remember our Washington Currents item, "Uncle Sam May Need You" (*Sport Diver Magazine*, January, 1978)? The idea was for NOAA to enlist the help of sport divers in ecological programs such as pollution control and water sampling. It was a grand plan and it was met with favorable response from divers. But, typically, NOAA let the idea sink.

What happened? In a word—inertia! Once again the agency proved that its call letters stand for No Organization At All. NOAA could have counted on thousands of divers willing and able to devote time and energy to the cause—and it wouldn't have cost the taxpayers a cent.

But don't look for a corps of volunteer divers this year. Instead, be on notice that the program may be dusted off for 1979.

NOAA is taking intense heat from the White House and is on the line to come up with an imaginative (and cost-effective) set of initiatives. It must act or go the way of the old Atomic Energy Commission—chopped into little pieces and fed to other agencies. A volunteer corps of citizen divers won't solve all the agency's problems, but it will help.

Ever since the taxpayer's revolt under California's Proposition 13 gained national headlines, Washington has been digging for ways to reduce spending. A cadre of divers is one way for NOAA to trim its budgetary fat.

Sport Diver Magazine would like to present the agency with your positive ideas and suggestions on how this program might work. Please write to us with your proposals. If the bureaucrats and certain committees in Congress are made to see the potential, the sleepy giant of NOAA may be forced to use the power of the people instead of our shrinking tax dollars.

Dive Table, Physiological Studies On Tap

President Carter, in signing the Outer Continental Shelf Land Act Amendments of 1977, will at last mandate federal studies to update and refine compressed air diving tables.

Also mandated will be new physiological studies on man in the sea.

Similar research was recommended last year by the National Advisory Committee on Oceans and Atmosphere (NACOA) but Washington didn't follow through. Apparently, the Administration was too busy disclaiming Peter Bourne's drug charges and cleaning up Hamilton Jordan's act to do much about the oceans.

The new OCS studies will aim primarily at deep offshore work by commercial interests. But the ripples will reach sport divers, Capitol Hill sources tell us.

The major oil and gas companies have invented a variety of tables for air and mixed gases which are among the most advanced in the world. But private industry isn't about to give away its most closely held secrets.

Work by the government, however, will make the new research available to all of us, since the OCS amendments will place much new data in the public domain.

Let's hope Mr. Carter, in signing the amendments, will understand the need for new tables and related studies and move ahead without further delay.

Ladies of Salt River Canyon

Three young women from the University of Puerto Rico became official U.S. Aquanauts in July when they completed a week-long saturation dive in Hydrolab, Salt River Canyon, St. Croix.

The marine biologists bring to 20 the number of women Aquanauts who have successfully completed saturation experiments in various U.S. underwater facilities in the past eight years.

Ileano Clavijo, Deborah Arneson and Linda Meiklejohn were on the bottom conducting a fish census between July 21-28 and spent 17 hours recompressing in a chamber.

Hydrolab officials in Washington said the ladies of Salt River Canyon handled themselves as deftly as any male Aquanaut. The Hydrolab selection process is made without regard for gender.

The facility allows male-female research teams who make their own "privacy arrangements". But the Puerto Rican group was all-female.

What did they talk about when they weren't counting fishes? One Hydrolab officer said they discussed ways to bring some men into the lab with them next time around.

continued next column

Washington Currents Predicts

With this last column of 1978 we've included a bit of crystal ball gazing by active oceans people in Washington. They tell us to look for the following news breaks before Washington Currents returns in January:

For Women: A research team will form at Bethesda Naval Hospital (hospital of the Presidents in nearby Maryland) to make a definitive study of the potential dangers faced by pregnant divers . . . **Computerized Regulator:** A Washington-based electronics engineer/diver will make public a computerized regulator and time/depth/pressure console. Breathing resistance will be virtually non-existent. Inhalation will activate a tiny sensor triggering precise amounts of air to the diver . . . **Pollution Alert:** A well-known research diver/biologist will announce that oil and pesticide now exists in measurable amounts under the Arctic ice, an area once thought to be pollution-free. The findings will be vigorously criticized by major oil companies . . . **Dive Cuba:** The Congressional Underwater Explorers Club, a group of diving senators and congressmen, will dust off plans to visit Cuban waters. A trip to Castro country was considered this year but the idea was tabled; the trip was considered too political in an election year. But in 1979 the atmosphere will lighten . . . **RV Fleet Cuts:** The Commerce Department won't replace 33 aging oceanographic research vessels (RVs), leaving us an all-time low of 48. A few years ago, we had 200 RVs. Also cut will be certain man in the sea experiments. Commerce will tell us the cuts are a way to whip inflation . . . **McKinney:** Charles M. McKinney, Interior Department's Federal Antiquities Manager, will receive backing from powerful leaders on Capitol Hill for his plans to protect historic shipwrecks on the OCS . . . **Lost Island:** Washington will want to know what west coast diver/atomic physicist Bob Schmieder has discovered at Cordell Bank, a sunken island located off the coast of California near the Farallons. Summit of Cordell Bank lies 120 feet below the surface. The island has attracted the attention of Soviet "trawlers" with their bristling electronic sensing gear. What's so mysterious about Cordell Bank? That's what Schmieder will tell us next year . . . **RMN's Return:** Former President Nixon, seeking new support for a re-entry to political life, will give up his hobby of tape recording and go for a C-card instead. It's predicted he'll lose 18½ minutes of bottom time on his checkout.

We hope so. Even famous lady Aquanauts have to agree: Nothing brightens an underwater habitat so much as co-ed habitation.

Fill 'er Up, King Neptune

While our oil companies dig into the ocean floor searching for energy sources, there are rumblings in Congress about a strange new proposal to recover oil from World War II freighters lost in U.S. waters.

As far-out as this may sound, the idea is being seriously (and quietly) discussed by a group of influential lawmakers.

They say maritime records reveal that millions of gallons of oil went to the bottom during the war.

A salvage project of this magnitude is going to cost a lot of money. But the congressmen say there's enough down there to make it worthwhile. They point out that one freighter off the New Jersey coast contains 1.2 million gallons, "and that's only a start," according to one official in on the plans.

The price of oil is now so high that it may be cheaper to salvage it from the ocean than to buy it from the Arabs.

So, if you discover salt in your gas tank next year at least you'll know it was the product of American ingenuity.

Physiology of Sport Diving

The islands of Bonaire and Curacao are the chosen hosts for the second advanced course on the Medicine and Physiology of Sport Diving which will take place December 2 through the 10th. The course, devised by Dr. Jefferson Davis, will concentrate on all aspects of sport diving.

The staff, one of the finest ever assembled, consists of Jefferson Davis, M.D., San Antonio, Texas; Peter Bennett, Ph.D., Duke University Medical Center; David Elliott, M.D., Ph.D., of London, England and Eric Kindwall, M.D. Milwaukee, Wisconsin. Peter Bennett and David Elliott co-authored "The Physiology and Medicine of Diving" which is the world's standard text in this field.

In addition to the academic seminar, a complete diving program has been arranged in Bonaire. Travel arrangements will be handled by Helen Turcotte of Medical Seminars, Inc.

For a brochure and academic schedule, please contact:

Jefferson Davis, M.D.
8710 Data Point Suite 7604
San Antonio, Texas 78229
Phone (512) 696-5884

CP Hotels and the Underwater Explorers Society make diving in the Bahamas better than ever.

Take the clearest diving waters on earth in beautiful Freeport/Lucaya in the Bahamas. Add the world's largest hotel diving complex. Throw in the best diving packages around. And you can dive all you want, without getting soaked.

Canadian Pacific Hotels' Lucayan Harbour Inn & Marina and Lucayan Bay Hotel and the world-famous Underwater Explorers Society, based right at the resorts. Where our dive packages include everything under the sun. And under the sea.

Lucayan Bay / Lucayan Harbour Inn / Underwater Explorers Society Dive Package. 4 days/3 nights & 8 days/7 nights.

Includes: Air-conditioned guest room. All necessary scuba equipment. 3-hour introductory scuba course for novices with certified instructors (lesson counts as 1 dive). 3 guided reef dives (on 3-night program), 7 reef dives (on 7-night program).

Per person/double occupancy

	Summer (4/16-12/16/78)	Winter (12/17/78-4/28/79)
4 days/3 nights	\$ 84.00	\$117.00
8 days/7 nights	196.00	273.00
Extra night	28.00	48.00

MAP (Breakfasts and dinner daily): Add \$15 per person daily.

For reservations or information, see your travel agent. Or call toll-free in the U.S. 1-800-323-8811 (in Illinois 1-800-942-8880). In Canada 1-800-268-9411. Province of Quebec and Ottawa 1-800-268-9420. Toronto 361-1400. Or write, CP Hotels, 255 Alhambra Circle, Suite 455, Coral Gables, Florida 33134 (305) 446-2226.

Lucayan Bay Lucayan Harbour Inn

Freeport/Lucaya, Bahamas

CP Hotels

31 fine hotels in 7 countries around the world.





Picture a modern, elegant resort set in a 30-acre botanical garden — and smack in the middle of a 32-mile-long barrier reef. Private, cozy, and unique! That's SPYGLASS — alone in its class.

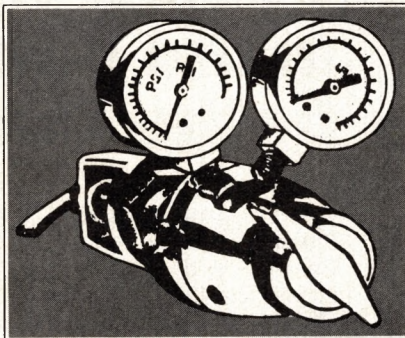
Guests and members keep coming back, because it's nice to have two dives a day, meals, fresh-water pool, boats and guides — all covered in regular rates. And fewer insects that you can imagine possible in the tropics!

Take the recommendations of Columbus, Morgan and Barbarossa. They loved it — for the same reasons you will! Nothing has changed much since the island flag was the "Jolly Roger."

For Information & Reservations wire or write to above address or U.S.A. c/o Roseo Affiliates
Address: 630 N. Western
Lake Forest, Ill. 60045
Tel: (312) 234-2222

SCUBA VERTER

CONVERTS YOUR SCUBA TANK TO A MULTITUDE OF TOPSIDE USES.



It delivers air from 0 to 75 psi to inflate tires or rafts, air dry parts, or spray paint, and is easily adapted to other low pressure accessories.

\$75.00 FREIGHT INCLUDED

DIVE WORLD

3090 Pace Blvd.
Pensacola, FL 32505

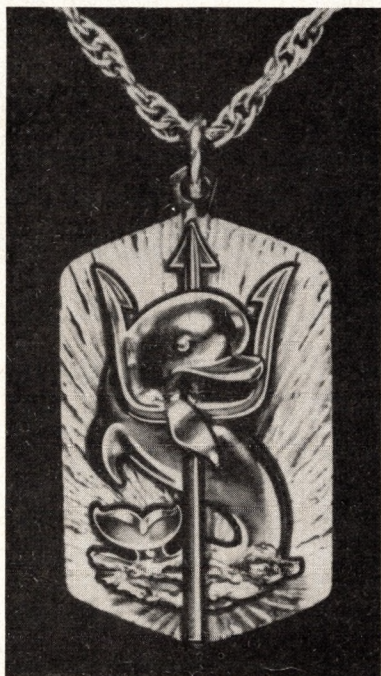
Florida Diving Hotline

To keep you up-to-date on the latest Florida diving information Sub-Aqua Specialties of Valdosta, Georgia has installed a toll-free hotline. For the latest weather reports, site conditions and information call 1 (800) 841-4443 nationwide. In Georgia, call 1 (800) 342-7156.

Graver Receives Award

Dennis Graver, National Training Director, has been awarded the Los Angeles County Underwater Instructor Association Education Award for 1977 for new developments in underwater instruction.

Dennis has supported the Los Angeles County Underwater Instructor Certification Courses and Advanced Diver Programs for years and has provided general support to the County Underwater Unit. In addition to these efforts L. A. County also recognized his contributions to the sport through the National Scuba Exam series in SKIN DIVER Magazine, which he has authored since January, 1975; his numerous articles on diving; and his best-selling book, "Sport Diving, A to Z".



Diver's Lucky Cross

Order now for Christmas

The sign of the dolphin around a trident is a Christian symbol of the crucifixion and resurrection of Jesus Christ and has survived from the catacombs. Ancient Greek warriors once carried him into battle on their shields for luck. Dolphins have long been known to aid sailors in distress and the friendly creature is sculptured here, for you, by a leading artist and hand finished by English master craftsmen. Solidly fashioned from materials impervious to sea water it could accompany divers to the ocean floor. Approved by the Church, it includes a certificate and presentation case, as supplied to The British Sub Aqua Club.

Large silver, \$49.00
Large 14 kt, \$400.00 (to order)
Small silver, \$30.00 Small 14 kt, \$140.00
Silver chains (to order)
22 inch, \$16.50 20 inch, \$11.75

Registered air-mail add \$4.00

The Robert Stratton Studio

87 Devon Road, Warley
West Midlands B67 5EL England

DIVERS

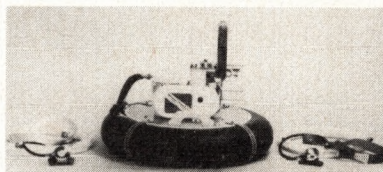
Looking for more convenient gear?
BROWNIE'S THIRD LUNG

Price \$412.00. Includes: Two Demand Regulators, Hoses and Harnesses. Five different models.

For free brochure send self-addressed stamped envelope.

W. C. BROWN, INC.

2370 S.E. 11 St./Ph. 305-942-3205
Pompano Beach, Florida 33062



DIVE THE BEAUTIFUL FLORIDA KEYS

With your hosts
RON and JOAN SCHILKE

Family units - villas - A/C - TV -
Lessons - Pool - Boat & Equipment
Rentals - Air Station - Repairs - U/W
Photography - Ramp - Marina - Fuel -
Charter Boats - Restaurant - Lounge -
Tiki Bar - Tennis

FREE MAP AND BROCHURE
Complete Diver
and Family Resort,
Five Minutes from
Airport



Ph. (305) 743-5555 Marathon, FL 33050

CONTROVERSEA

SHIPWRECKS AND TREASURE: The Legal Issue



*By John R. Wenzel
Photos by Don Kincaid*

1978 has been a year of decision and turmoil in the fields of u/w archaeology and treasure hunting. Legal proceedings, legislative proposals and court cases have come to a head, and feelings between the government, archaeologists and treasure hunters have reached the boiling point.

As the relationship of these three groups, as defined by the law and the courts, has become less clear, a question has emerged which deeply concerns sport divers: How will we deal with the priceless historical record bequeathed to us in the form of shipwrecks?

Each of the three competing groups mentioned above has tried to marshal the help (or ire) of sport divers in aid of its own programs or interests. With few exceptions, media coverage of the events and issues involved has been shoddy and self-serving at best. At its worst it has been downright irresponsible. Sport divers have been used as cannon fodder in a war that will determine their rights and opportunities to visit and enjoy wrecks.

A shipwreck has three aspects. It is a physical thing — an underwater setting for a diving adventure. Preserving the wreck in an enjoyable state is the foremost interest of the sport diver. A wreck is an assemblage of artifacts — antiques which can bring a good price for the willing treasure hunter. A wreck also embodies a priceless historical record for the archaeologist. A ship is a microcosm of the culture of the men who sail her. To uncover such a microcosm expands our knowledge of that culture and contributes to our self-understanding.

Unfortunately, the three interests outlined above are almost directly competitive. In order to fully enjoy a wreck the diver wants to see it intact and preserved. The archaeologist, to recover the data for study must carefully dismantle and thus destroy the wreck. The economics of treasure hunting dictate that the dismantling be done in a quick and cost-efficient manner, limiting the amount of data that can be recovered.

The government's role should be

that of a referee — to arbitrate these interests so that the best interests of society, as a whole, are served.

The court case which most sharply focuses these issues and has had the most impact on the law governing historic salvage is *Treasure Salvors and Armada Research Corp. vs. Unidentified Wreck* believed to be the *Nuestra Senora de Atocha*. This case involves a court test of the fundamental concept and propriety of government statutes concerning historic shipwrecks.

Briefly, in 1971, *Treasure Salvors, Inc.*, a salvage firm headed by Mel Fisher, located what they believed to be the *Nuestra Senora de Atocha*. In 1622 the *Atocha* was bound from the mints in Mexico to Spain carrying valuables including 980 silver bars and 250,000 pieces of eight. She foundered in a storm and sank in the Straits of Florida. Wreckage found near the Marquesas Keys, 45 miles west of Key West, Florida has been identified by Fisher as that of the *Atocha*.



W. A. Cockrell (with beard), Archaeologist for the Florida Division of Archives and Records Management, reviews artifacts recovered from the Atocha. After this division, the State kept one quarter of the artifacts, returning the rest to Mel Fisher. A diver (opposite page) recovers a gold chain from the Atocha wrecksite.

Under Chapter 267 of the Florida Statutes, the state asserted its right to station a state archaeologist aboard the salvage vessel and to retain 25% of the artifacts for archaeological purposes.

Fisher signed a contract with the state granting him rights of salvage in return for one fourth of the artifacts. Fisher then sued in admiralty court for full possession of the Atocha. The U.S. government intervened, pressing its claim to the Atocha. The claim was held unwarranted under present federal statutes, and the Fifth Circuit ruled in favor of Treasure Salvors, Inc.

The government chose not to appeal the ruling. Treasure Salvors, Inc. has since sued the State of Florida for the return of the artifacts which the state received as their 25% share. On August 21, 1978 Federal District Judge William Mehrrens ruled in favor of Treasure Salvors, Inc. The state has appealed the ruling, which cast doubt on the validity of the statute asserting state control over historic wrecks. — Editor

HOW IT ALL STARTED

Litigation involving the U.S. Government and the State of Florida against Treasure Salvors, Inc., who successfully salvaged the remains of the *Nuestra Senora de Atocha* has resulted in fallout in the form of a proposal by the U.S. Department of the Interior to take over control of all off-shore wreck sites and determine who shall and who shall not recover the wrecks and their artifacts and control disposition of the artifacts. The web of proposed control and legislation may have a significant impact on the sport diving community.

Charles McKinney, Manager of the Interior Department's Federal Antiquities Program, first announced the government's plans at the Key West Conference on Florida Historic Wreck Archaeology in November, 1977.

Battle lines were swiftly drawn as Mr. McKinney made clear the purpose of the proposed legislation — to prevent "looting" or "pillaging" of America's underwater archaeological treasures by private "self-seeking" treasure salvors "interested only in profit".

The basic idea would be to enlist the aid of the academic community, the sport diving public and professional salvage companies in identifying, cataloguing, classifying and perhaps salvaging wrecks identified as being of true historical import, all under the guidance and control of the Department of the Interior.

The howl of protest from professional treasure hunters was immediate and widespread. The treasure divers interpreted the proposal as a direct threat to their existence. A January meeting of the Ninth International Conference on Underwater Archaeology in San Antonio, Texas, attended by Mr. McKinney and the treasure diving community, was equally unsatisfactory.

The polarization between treasure divers and the Interior Department led to the formation of the National Explorers and Collectors Association (NECA) by the treasure divers in Key West, and preliminary legal activity by Interior to formalize the proposal into new statutes and regulations.

It is clear that both sides are now attempting to enlist the support of the sport diving industry and public for their respective positions; no regulation at all

(treasure divers), versus some systemic plan of control over underwater archaeological sites (Interior). It is this author's judgement that legislation will be developed within the year by Interior and presented to Congress next year.

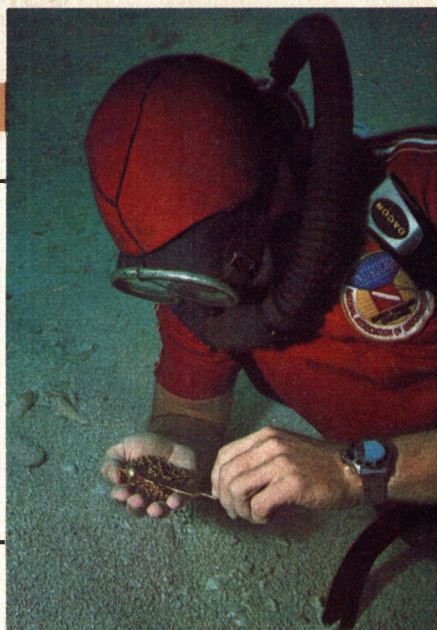
Some legislative and rule-making activity has already occurred. Mr. McKinney plans to meet with groups around the country to formulate the legislation he wants. But over-shadowing all of Interior's plans are current law and international treaties which may doom any attempt by the Department of Interior to control off-shore wreck sites.

THE FEDERAL GOVERNMENT MAY HAVE NO POWER

Back-to-back decisions by the Supreme Court of the United States in 1975 resulted in a determination of exclusive federal jurisdiction over the outer continental shelf, to the exclusion of any state control beyond the 3-mile limit (and about 9 miles in the Gulf of Mexico). Then, a later U.S. Court of Appeals decision in the Fifth Circuit held that the federal government's control beyond the 3-mile limit does not extend to shipwrecks or cargoes on or in the sea floor.

United States interest in the natural resources of the subsoil and seabed of the continental shelf began with the Truman Proclamation of September 28, 1945, which asserted federal jurisdiction and control over the mineral resources of the continental shelf, but was not intended to either extend U.S. territorial limits or impede navigation in waters over the shelf. Soon, disputes developed between the United States and various coastal states asserting control over territorial waters.

*The government's role
should be to arbitrate these
interests so that the best
interests of society
are served.*



Then in 1947, the Supreme Court held that the United States had rights superior to the states over the off-shore seabed.

Congress reacted by passing two laws in 1953: (1) The Submerged Lands Act declared coastal states' title to and ownership of the lands and natural resources within the territorial sea; (2) The Outer Continental Shelf Lands Act declared United States paramount rights to the seabed beyond the 3-mile limit. This was confirmed in 1975 by the Supreme Court.

Accordingly, in the back-to-back decision of the Supreme Court in *United States Vs. Florida*, 420 US 531 (1975), Florida's claim to the wreck site of the *Atocha* was refuted and Treasure Salvors, Inc. contract with Florida, which said Florida would get 25% of the finds, was cancelled. The federal government then stepped in to claim the *Atocha*.

In 1964, a very significant international treaty was signed and ratified by the United States, the Convention on the Continental Shelf. It was a product of the United Nations Conference on the Law of the Sea, convened at Geneva in 1958. The Convention assures to each coastal nation the exclusive right to explore and exploit the natural resources beneath not only its territorial sea, but also beyond the territorial sea to its adjacent continental shelf.

An important point in interpreting the Convention is that it refers to exploring the continental shelf and exploiting its natural resources. Of course, a shipwreck is not a natural resource.

There is a reasonable argument that the language of the Outer Continental Shelf Lands Act may be incompatible with the language of the Convention on the

Continental Shelf. However, the Convention became effective law in the United States 11 years after passage of the Outer Continental Shelf Lands Act and thus supersedes any compatible language in the Act.

This is an essential holding in *Treasure Salvors, Inc. Vs. Unidentified Wreck . . . the Atocha*, the case on appeal after the federal government stepped in to try its hand at claiming the *Atocha*. The judgment in this case is now final since the Justice Department decided not to appeal the decision to the Supreme Court.

The federal government pressed a basketful of legal theories in its claim to the *Atocha*, all of which were discarded by the Court.

Presently then, the United States government has no authority over wrecksites lying on the continental shelf beyond the 3-mile limit. Nor does it have any control over wrecksites within the 3-mile limit; such areas are under control of coastal states. Thus, any proposal by Interior to extend U.S. territorial jurisdiction is likely to be resisted.

The eventual outcome will be decided in Congress where treaty conflicts are viewed with suspicion.

LAW OF THE SEA CONFERENCE

Since 1973, this Conference has been attempting to draft a comprehensive international system to govern exploration of the oceans and recovery of minerals on the ocean floor. It will probably update the 1958 Convention on the Continental Shelf and may make provision for control over shipwrecks as well. In any event, this Conference is now in its seventh session and may go on for years before a final draft

treaty is finalized and presented to the nations of the world for ratification.

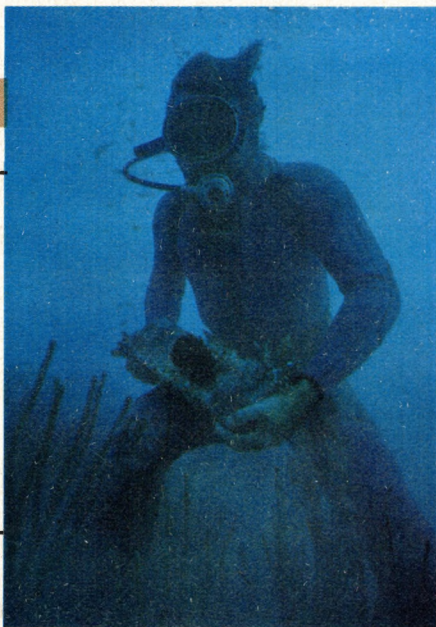
If the treaty is ever drafted and ratified, Congress could probably then grant Interior the legal right to control over underwater sites extending 200 miles from shore. Presently, however, the 1958 Convention on the Continental Shelf governs. Congress would have to drastically reinterpret this Convention to give Interior the control it now seeks.

THE STATE GOVERNMENTS MAY HAVE NO POWER

Presently, several states have Antiquities Acts in force or exercise control over salvage of sites in waters within their boundaries. After the federal government lost its case against Mel Fisher and the *Atocha*, Florida stepped back in to press its claim. The result was a federal District Court decision handed down on August 21, 1978, by Judge William O. Mehrtens, the same judge who initially ruled out any federal government claim to the *Atocha*, concerning Florida's rights to the *Atocha* and its artifacts.

The Court held that Florida had no right at all to the *Atocha*, even if the wrecksite had been located within Florida's territorial waters! This decision has no legal effect beyond Florida, of course, but certainly it casts serious doubts on the legal viability of several states' laws controlling underwater sites within state waters which are subject to general admiralty and maritime law.

In his decision, which Florida has appealed, Judge Mehrtens dealt with a battery of legal arguments similar in number to those raised by the federal government in its claim to the *Atocha*.



How will we deal with the priceless historical record left us in the form of shipwrecks?

Florida struck out on every point.

Since the *Atocha* was located in international waters, Florida had no right to attempt to interfere with salvage of the *Atocha* or to claim legal title to the wreck and its treasure.

More importantly, even if the wrecksite had been within Florida's territorial limits, Florida has no power because salvage of the wreck is governed by admiralty and maritime law which is the exclusive domain of the federal government under Article III, Section 2(1) of the U.S. Constitution (the judicial power of the United States extends to *all* cases of admiralty and maritime jurisdiction).

Florida tried to apply the Eleventh Amendment which limits the judicial power of the United States in some cases but the court said the Eleventh Amendment is a shield to protect the fiscal integrity of the states from outside attack. The Eleventh Amendment cannot be used as a sword to deprive U.S. citizens of property.

The Florida law or Antiquities Act under which it contracted Mel Fisher to salvage the *Atocha* not only does violence to admiralty but also is inapplicable to shipwrecks. The Florida Act uses the term "treasure trove", which is something concealed or buried by the original owner — it is not lost property. Clearly the *Atocha* was neither purpose — fully buried nor concealed by the original owner for safekeeping.

As for admiralty law, its purpose is to encourage the recovery of vessels and to give title to the finder. Florida has no right to claim a sovereign prerogative to title to the wreck nor to interfere with admiralty law.

Worse yet, the contract entered into by Florida and Mel Fisher was illegal.

First, Florida had no right to enter into such a contract. Second, the contract was entered into in bad faith by Florida because it provided that, if salvage operations were terminated, Florida would get everything and Mel Fisher would get nothing. That is coercion.

Certainly other various state laws and regulations that govern the recovery of shipwrecks and their artifacts, particularly those interfering with admiralty law and calling for a division of property between the finder and the state, are now highly suspect as being in direct conflict with the Constitution of the United States.

If this decision is upheld on appeal, then in effect this country and the individual states are presently left with little or no power to control the preservation or recovery of the nation's underwater archaeological heritage. A vacuum has been created and the law abhors a vacuum.

WILL CONGRESS ACT?

Congress has no choice but to act on the uncertainties created by reasonable interpretations of international treaties as well as equally reasonable decisions rendered by the Supreme Court and federal courts in Florida.

There can be no question of our society's conservation ethic in wanting to preserve and utilize the nation's archaeological heritage, above and below the sea, to the best possible benefit for all of us. Equally important are the rights of individuals to invest their fortunes and their very lives in the quest for sunken treasure and its financial rewards and not

to have their profits confiscated indiscriminately by government.

Yes, Congress will act. It has to. Unwarranted government harassment must stop. At the same time, our underwater archaeological heritage must never be pillaged or looted.

It won't be easy but Congress can find its way around the infirmities created by its adoption of the Convention on the Continental Shelf and the Marine Sanctuaries Act. It can rewrite the federal Antiquities Act. It can protect our priceless underwater treasures while making the search for them a paying proposition.

One point is certain: It is high time for sober, mature thought on this issue rather than journalistic spleen-venting of the kind that has occurred in other periodicals over the last year.

Rule making and legislative efforts have been started by the Department of the Interior in recent months. In the main they have been unimaginative and counterproductive. But the tide is beginning to change.

INTERIOR'S LEGAL ACTIVITIES TO DATE

Early this year, the Interior Department decided to dust off the 1906 Antiquities Act by asking Congress to allow the secretary of the Interior to define just what an "object of antiquity" should be. At the same time, a rule making proceeding was started by Interior to provide the needed definition.

The amendment to the Antiquities Act, giving the Secretary of Interior the broad power to define an object of antiquity, slipped through the Senate virtually unnoticed as a paragraph of

According to the ship's manifest located in the Archives of the Indies in Spain, the Atocha was carrying over 900 silver bars like this one when she sank. A few of the bronze cannons (opposite) recovered by Treasure Salvors are hoisted onto the work barge.



Senate bill 1437 — a massive rewriting of the federal criminal code, several hundred pages long. S1437 emerged in the House as HR6869 and will likely die in committee this year, along with this amendment.

The 1906 Antiquities Act suffers two major infirmities. First, it was initially intended to protect American Indian lands from pillaging and looting by the white man. There was no initial Congressional intent to vest control over shipwrecks and shipwreck sites in the Interior Department. Secondly, it has been determined by the Ninth Circuit to be unconstitutionally vague and therefore unenforceable. Thus, for more than 60 years, the government allowed cobwebs to grow over the Act.

But more importantly, the Antiquities Act only gives the government control over objects "situated on lands owned or controlled by the Government of the United States" and this limitation appears in the amendment proposed by Interior. The continental shelf beyond the 3-mile limit is neither U.S.-owned "lands" nor is it controlled by the United States.

Accordingly, even an amended Antiquities Act will give the government no control of any importance over off-shore shipwrecks.

The rule making proceeding under a hoped-for amended Antiquities Act was announced April 10, 1978. It was proposed that "object of antiquity" be defined as including all archaeologically interesting items of 100 or more years old, ranging from old bones and fossils to "vessels" and "ships armaments". Mr. McKinney now wants to reduce the 100-year-old limitation to 50 years to encompass more recent historic sites.

Yet the rulemaking will have no

effect unless the Antiquities Act is first amended to permit the Interior Secretary to make such a definition.

Thus far, legislative and rulemaking procedures of the Interior Department have been poor. Even the Amended Antiquities Act, as proposed, would probably be unenforceable.

Worse yet, the very term "object of antiquity" has been found to be unconstitutionally vague. The way to cure this infirmity is to go to Congress and propose more imaginative language, and not to leave it to the federal bureaucracy to cure an unenforceable law.

The real surprise to this author in viewing Interior's legal efforts to date is apparent bad legal advice given within the Interior Department as to how to gain control over shipwreck sites. This is an important issue deserving of better legal attention by Interior.

What is needed is a bold, straightforward, easily comprehended proposal that can be honestly debated in Congress and not inartful tinkering with an out-of-date, constitutionally crippled statute accompanied by a meaningless rule-making proceeding.

But things are changing. Recent public pronouncements from Mr. McKinney indicate an honest willingness to absorb the good ideas from all interested parties and perhaps develop a law we can all live with.

WHAT DO SPORT DIVERS WANT?

Certainly sport divers want to protect their right to freely dive on wrecks and other archaeologically interesting sites without unnecessary interference from any government bureaucracy. On

the other hand, even the strongest views taken to date against the McKinney proposal echo a realization of the need to somehow define and then preserve the nation's cultural resources and priceless archaeological heritage. This seems particularly true of sport divers, most of whom have a strong conservation ethic — a desire to preserve what we find underwater so that others who come later may enjoy the beauty beneath the seas.

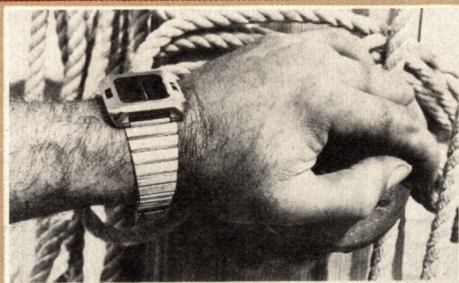
Of course, there is an understanding of the admiration for Robert Marx, Frank Allen and others who have created the expertise of exploring and recovering artifacts and sunken ships and treasure from around the world. Surely a plan can be developed that will assure the treasure hunters ample rewards for their investments of money, time and lives. And how about the dealers of coins, artifacts and other antiquities? It's an honest livelihood that should not be unduly restricted.

The notion of absolute rights to do anything we want with what we find underwater is a justified one, based on the concept of individual freedom that underlies the foundation of our society and government. But there are competing interests here — to preserve and protect our American archaeological heritage for the benefit of all the people.

Some day, probably next year, there will be a law passed governing or at least controlling the sport diver's right to recover underwater artifacts of historic or archaeological importance. Given that reality, it would be wise to accept Mr. McKinney's invitation to participate in the lawmaking process. It will be a grand and rewarding adventure.

Be realistic. Get involved. ☸

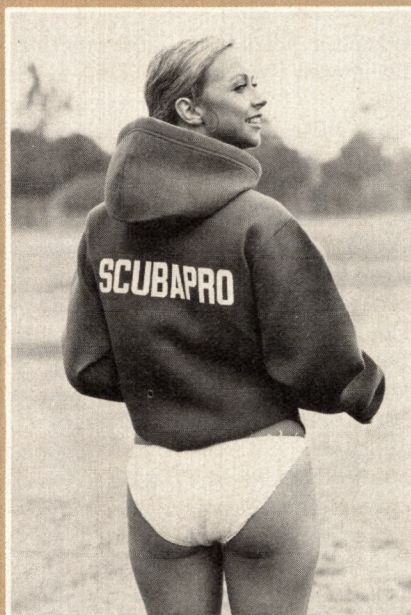
New for '88



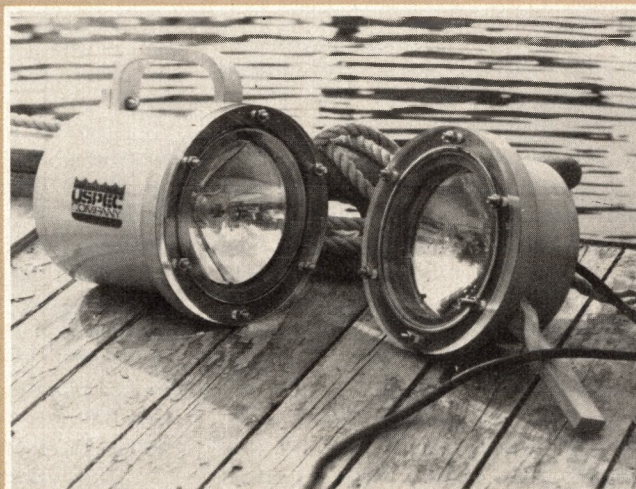
1



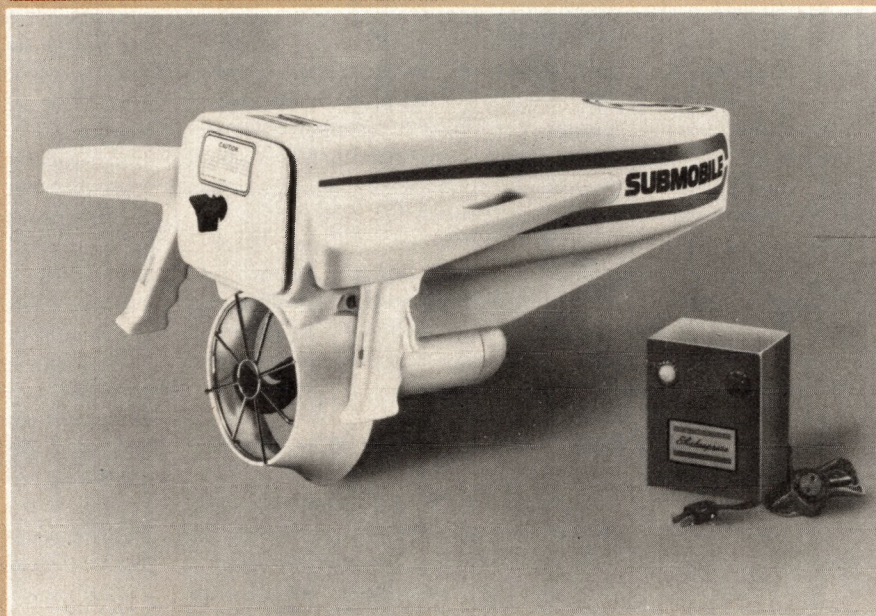
2



5



6



8



3

1 NOW YOU'RE NOT GOING TO BELIEVE THIS, BUT . . . the new Divemaster solar powered digital watch has a programmed memory to compensate for 28, 30 and 31 day months and leap years until the year 2100. It's pressure tested to 750 feet and can outlast John Cameron Swayze. Stainless steel or black finish, with hours, minutes, seconds, day, date, month, leap year cycle and AM or PM. Divetime Industries, 337 West John Street, Hicksville, NY 11801.



4

2 WRAPAROUND COMFORT . . . The SeaQuest Delta BC has a specially designed inner and outer bag to prevent chest squeeze when full and allow you to maintain a vertical position on the surface. Available in yellow or blue with CO2 and LP inflator. SeaQuest, 722 Genevieve St., Solana Beach, CA 92075.

3 NIXON WOULD NEVER HAVE LOST THOSE 18½ MINUTES . . . if he'd have had the Bottom Timer. The first fully automatic stopwatch for divers, Bottom Timer automatically starts when you reach a depth of ten feet, stops on your ascent. Now available in orange and blue, dials have luminous hands and numbers. Princeton Tectronics, P.O. Box 764, Hightstown, NJ 08250.

4 The Treasure Hunter is a large capacity gear bag made of heavy 11 oz. cordura nylon. Two end pockets and shoulder strap. Available in navy, red and California blue. Westridge Manufacturing/Dolt, 11920 S.W. Olympic Blvd., Los Angeles, CA 90064.

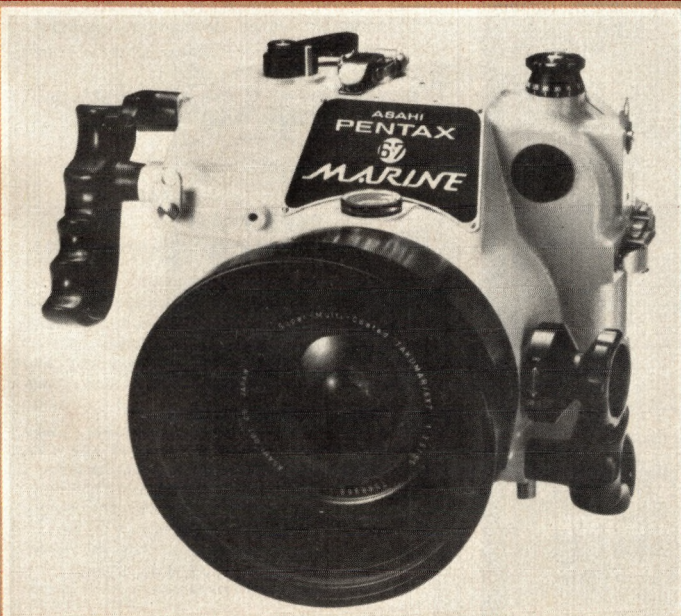


7

5 HOT PROPERTY . . . The new Scubapro Boat Coat keeps your temperature up on those chilly boat rides. Made of lightweight, water-repellent acrylic, the triple-laminated, 100% orlon-polyurethane foam nylon Boat Coat is ideal for all weather conditions. Scubapro, 3105 E. Harcourt, Compton, CA 90221.

6 CAN'T BE BEAT FOR FINDING YOUR WAY AROUND THE SUB . . . The new Captain Nemo dive light features super-bright quartz halogen bulb — burns brighter and longer than a sealed beam light. High impact PVC housing is pressure tested to 300 feet. Rechargeable gel-cell battery provides one hour of continuous use. Surface supplied unit is smaller, doubles as a waterproof searchlight. Underwater Specialty Company, Bartlett Place, Brooklyn, NY 11229.

7 This new Selpac gauge package includes a Selpac SPG-5000 submersible pressure gauge and a Cavalero SDG-350 oil-filled depth gauge in a Pennform console case. Available in black, blue, red or yellow, the combo is as attractive as its price. Selpac Southeast, 3020 Adriatic Court, Norcross, GA 30071.



9

8 SUPER SCOOTER . . . Forget drift diving, drive to your favorite reef with the Shakespeare Submobile. Built around the Shakespeare trolling motor and powered by rechargeable gel-type batteries, the submobile can cruise for a full hour on one charge. Shakespeare Products, 241 E. Kalamazoo Ave., Kalamazoo, MI 49007.

9 Now there's a housing for the Asahi Pentax 6x7 camera. Tested to a depth of 50 meters, the housing is made of corrosion-treated aluminum alloy. Four ports are available to accommodate any of seven lenses. O-rings seal each joint, black vinyl non-slip grip, knobs and lever. Pentax Corporation, 9 Inverness Dr., Englewood, CO 80110.

The depths to which a person sinks . . .

is clearer in the Out Islands
of the Bahamas,

and best at

Current Club

NORTH
ELEUTHERA,
BAHAMAS

DIVERS'
PACKAGE
5 DAYS / 4 NIGHTS

\$219 per person
double occ.
INCLUDES ALL MEALS

Plus air conditioned junior suites,
tanks, air fills, weight belts.

For information and reservations,
Call TOLL FREE in U.S.: 800-327-0787
In Miami: 305-443-3821 or
TOLL FREE in Florida: 800-432-5594



DIVE

Explore with us the
Atlantis Road, wall, wrecks
and reefs around



BIMINI

4 Days, 3 Nights
\$294.00

Cost includes: three meals a day, air fare from Ft. Lauderdale,
unlimited air, accommodations aboard vessel, tanks-air, weight
belts, gratuities and taxes, all day boat diving.

Trips: Nov. 23, Dec. 27, March 4, June 13, July 1 and Aug. 31.

Groups any time. Group rates for clubs and shops.

**Write: Captain Sandbar Club, P.O. Box 675, Riverdale, Ga.
30274, Ph. (404) 478-7373**

SUNSHINE DESIGNS presents DIVERS DOWN JEWELRY

Quality Handcrafted Sterling Silver
Inlaid With Rare Italian Red Coral
and Fine Mother-of-Pearl.



Designed expressly for the SCUBA DIVER
exclusively by SUNSHINE DESIGNS
P.O. Box 2616
Key West, Florida 33040

Dealer inquiries welcomed.

Physician's Program in Undersea Medicine

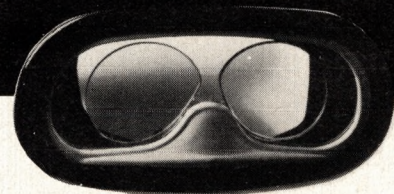
Human Underwater Biology, Inc. (HUB) will offer another Physician's Program in Undersea Medicine (PPUM) on the islands of Bonaire and Curacao in the Netherland Antilles from March 31 through April 8, 1979.

The program is approved by the American Medical Association for 30 Category I Continuing Medical Education credits through the Undersea Medical Society. It is also acceptable for 30 elective hours by the American Academy of Family Physicians.

The staff has been assembled on the basis of extensive experience in all aspects of diving medicine, physiology and safety. Bruce E. Bassett, Ph.D., Paul G. Linaneaver, Jr., M.D. FACP, Barny S. Kronman, M.D., and Roy L. Leamon, M.D., have been gathered to provide the course with a stimulating and informative academic program.

The program will be conducted at the Flamingo Beach Hotel on Bonaire. Attendees will stay at the Curacao Plaza on Curacao. For a brochure and academic schedule write: Program Coordinator, Human Underwater Biology, Inc., P.O. Box 5893, San Antonio, TX 78201.

ALL AMERICAN® SCUBA Rx LENSES



for better underwater vision

Prescription lenses permanently bonded
to your mask. Available through your
doctor, scuba supplier or

BENSON OPTICAL CO., INC., Sports Div.
1812 Park Ave., Minneapolis, MN 55440 • 612-874-1511
Dealer inquiries welcome.

DIVE WITH SUPER SNORKEL

INCLUDES:

- diaphragm compressor
- 3 h.p. 4-cycle engine
- 2 demand regulators
- 2 hoses (40' each)
- float inflator
- diver's flag

- Stores in space 19" x 19" x 13"
- Quick set up without tools
- Light weight: < 40 lb.

ONLY \$415.00*



INNOVATIVE DESIGNS INC.
1870 Oak Creek Dr., Dunedin, FL 33528
(813) 784-5349

*Plus Shipping
Fla. residents add 4% tax

A Tribute to Deborah Brennan

Commercial Diving Center (CDC) has established an annual scholarship memorial award to honor its first female graduate, Deborah Brennan. Announcement of the scholarship was made by Jim Joiner, executive director of the Los Angeles Harbor based diving school, who said the recent death of Mrs. Brennan, a member of the N.A.U.I. Board of Directors, was "... a shock to all of us at CDC who had known her as an outstanding student, honor graduate, and a wonderful person."

Five feet tall, one hundred pound Deb was a pioneer in the diving community. Her involvement with diving started in 1968 when she worked as a research diver for limnological surveys in Seneca Lake while completing her B.A. at Elmira College. Her academic studies continued as she earned an M.S. and Ph.D. in physiology at the University of North Dakota. During this period Deb was affiliated with the Office of Naval Research Project, Man-in-the-Sea.

Deb's energy and drive built a diving community in the Midwest. She became a NAUI Instructor in 1970 at the Flint, Michigan ITC. Starting in 1971, she established an academic diving program at the University of North Dakota and Grand Forks Air Force Base.

Deborah staffed IQC's in North Dakota and Minnesota and several Chicago ITC's. In November, 1977, Deb became the first woman elected to the NAUI Board of Directors. At the March, 1978 Board of Directors meeting, Deb was voted Vice President by her fellow Board members.

"It was typical of Deb's great concern for others," Joiner said, "that during her course at CDC she gave generously of her leisure time to tutor fellow students who were having problems in academic subjects."

CDC instructors, who had viewed her enrollment at CDC with some concern, joined in praise of Deb's accomplishments. One said, "I knew she was a winner the day the welding instructor, who had been the safety director for Taylor Diving & Salvage, said he wished he had a full class just like her."

All this training wasn't just for fun. Deb opened a commercial diving company upon her return to North Dakota.

Explaining the details of the scholarship, Joiner said it will be presented annually at the close of the NAUI sponsored IQ conferences. A tuition scholarship in the amount of \$1989.00 will be awarded to a qualified prospect attending IQ/10 in November.

"Imagine...diving with a small heater to warm each breath for you!"

From **COLD WATER AND THE DIVER** by Dennis Graver, *Skin Diver Magazine*, February, 1978.

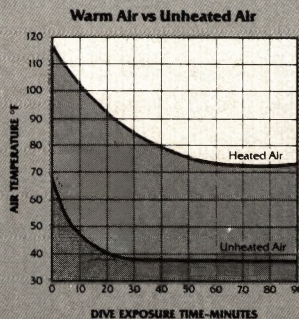
IT'S HERE NOW!

Until now, a cold water dive has been uncomfortable, risky and all too short. Now, WABA makes the miraculous difference.

Here's how it works:

WABA is a small heat exchanger powered entirely by hot water. It attaches to the breathing gas tank and provides warm air with every breath — higher than 75°F for intervals up to 2 hours and more before refilling. With WABA, you can dive in comfort and safety, and stay down longer.

The chart below shows how you can dive in colder waters, stay down longer and skip the warm-up periods between dives... read it and rejoice!



KEY: Ambient temp. 43°F; supply water temp. 124°F; supply air temp. 68°F; depth 100 ft.; breathing rate 30 breaths per min.; 2 liters per breath.

WABA is functional with all mixtures of breathing gas; attaches to most present breathing gear, and needs no additional equipment, power source or training to use. WABA has been thoroughly dive tested and used efficiently to depths in excess of 200 feet.



WABA

WARM AIR BREATHING APPARATUS

UNDERSEAS ENVIRONMENTALS, INC.
131 E. Redwood Street, Baltimore, Maryland 21202

☐ Please send me _____ WABA unit(s) at \$189 each.

☐ Please send me more information about WABA.

(Maryland residents add 5% State Sales Tax.)

NAME _____

ADDRESS _____

CITY _____

STATE _____

ZIP _____

I enclose ☐ Check ☐ Money Order

☐ Master Charge No. _____

☐ Visa No. _____

Exp. Date _____

Signature _____

To bring them up alive
he had to stay alive...

THE MAN WHO RODE SHARKS

**William R. Royal
with Robert F. Burgess**

Now he recalls his fifty
years of hair-raising
diving adventures and
astonishing under-
water archaeological
finds. \$8.95

79 Madison Ave., New York, N.Y. 10016

**DODD
MEAD**

A TREASURE FROM OCEAN GALLERY



"Cruiser"

"Each life, a journey, filled with things we have never seen before," reads the message of this 18"x24" poster of the award winning print "Cruiser." In subtle shades of blue, it embodies the beauty and mystery of the deep that continually enthralls and beckons each of us who love the sea. Frame it for an exquisite, enduring gift.

OCEAN GALLERY

P.O. Box 431636

Miami, Florida 33143

Please send me _____ poster(s) of
"Cruiser" @ \$2.50 + \$.50 handling. I have
enclosed payment.

Name _____

Address _____

City/State/Zip _____

**Dealer inquiries
invited.**

Introduction to Commercial Diving

The Commercial Diving Institute of Whitestone, New York has announced its latest course, "Introduction to Commercial Diving". The course is designed to allow certified divers, who do not necessarily want to become commercial divers, a chance to be exposed to and dive the different types of deep-sea gear without having to take a full-length commercial diving course.

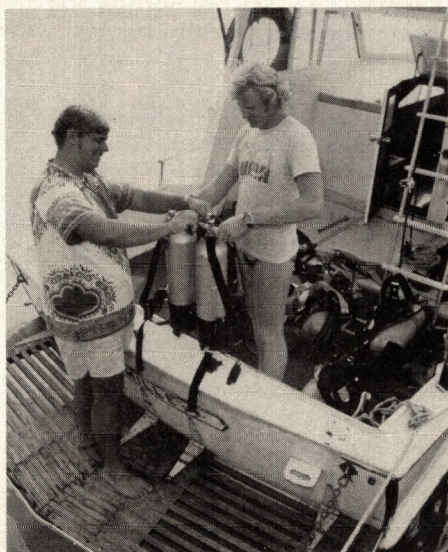
In explaining the reasons for offering the course, Director Larry Di Giacomo said, "After teaching commercial diving for a number of years, I found that a large number of people were interested in a course that would allow someone who didn't want to become a commercial diver, a chance to "get wet" in the different types of commercial gear — in other words, a course in commercial diving."

Anyone interested in obtaining more information about this unique new program should write to the school at 15119 Sixth Rd., Whitestone, New York 11357, or call (212) 767-7800, Monday thru Friday, 9 a.m. to 5 p.m. The school also gives free tours to individuals, groups or clubs.

Chart the waters of Puerto Macho in the next issue of *Sport Diver.*

HARBOUR ISLAND, BAHAMAS

Valentine's Yacht Club & Inn



DIVING AT IT'S BEST!

- Programs for beginners and advanced divers
- Dive Packages and group rates
- Full certification courses available

CONTACT:

VALENTINE'S YACHT CLUB AND INN

Box 1, Harbour Island, Bahamas
(809) 333-2142

OR

BAHAMAS RESERVATION SERVICE

(800) 327-0787
in Florida (800) 432-5592
in Canada ZEnith 99110

PUMP

The eleventh International Physicians Underwater Medicine Program has been scheduled for January 27 February 4. The seminar will be held at the Hotel Bonaire and the Curacao Plaza in the Dutch Caribbean.

The program is sponsored by the Undersea Medical Society and is approved for 25 hours of Category I Continuing Medical Education credits for the Physicians Recognition Award of the American Medical Society.

The purpose of this program will be to provide physicians with the fundamental knowledge in diving medicine to initiate proper therapy in the emergency treatment of diving-related casualties and diseases.

Three authorities in the field of diving medicine will serve as instructors for the seminar; C. Gresham Bayne, M.D., Martin J. Nemiroff, M.D. and Edward T. Thynn, M.D.

In addition to the medical seminar a complete diving program with various reef trips and night dives has been arranged.

For a free brochure and further information about the program, contact: PUMP, P. O. Box 530344, Miami, FL 33153, U.S.A., phone (305) 754-7480.

You're lookin' good...

Wear a good looking SPORT DIVER Tee Shirt. Let all the world see... you're lookin' good and you're into the exciting world of underwater diving! And besides that — when you wear your SPORT DIVER Tee, people know you read the world's most colorful dive journal. You're part of the SPORT DIVER family... and to international divers, that means the best!

Order a good lookin' SPORT DIVER Tee Shirt for yourself and your friends during this special offer. You're getting a dynamite value for only \$3.95 each!

To order, indicate your choice of colors and sizes on the coupon below and drop it in the mail with your check right away. *This offer holds only as long as the supply lasts.*

Your choice of blue or tan. In men's sizes: small, medium, large, extra large. Women's sizes: small, medium, large.

MAIL TO:

Sport Diver Magazine

P.O. Box 2781, Boulder, Colorado 80322

☐ Please send me the SPORT DIVER Tee Shirt(s) I have indicated below — for only \$3.95 each. (Non-U.S. residents add \$1.50 postage per order.) My check or money order is enclosed.

Quantity	Men's Size	Women's Size	Color

☐ Send me a year of SPORT DIVER (4 issues) for just \$9.95 — a 17% saving off the regular \$12 rate. My check or money order is enclosed.

☐ New subscription ☐ Renewal 8HO1

Name _____
(please print full name)

Address _____ Apt. _____

City _____ State _____

Country _____ Zip _____

Foreign postage on subscriptions and renewals: Add \$3 a year for Canada. Add \$5 a year (cash payments in U.S. currency only) for other countries outside U.S. and possessions. Please allow 30 to 60 days for delivery of first issue.

BENEATH THE SEA

Story by Julio Travieso

"The octopus, Oh horror! Inhales a man. It draws him to itself, and into itself. And, bound, immobile, he feels himself slowly ingested by that incredible being which is the monster. The horrible tentacles are supple as leather, solid as steel, cold as night." **Toiler of The Sea, Victor Hugo.**

Unlike the monsters of Victor Hugo, Jules Verne and other fiction writers, our common octopus (*Octopus vulgaris*) rarely measures more than a few feet in size. The only large species of octopus, the *Octopus appolyon*, is found in the waters of the North

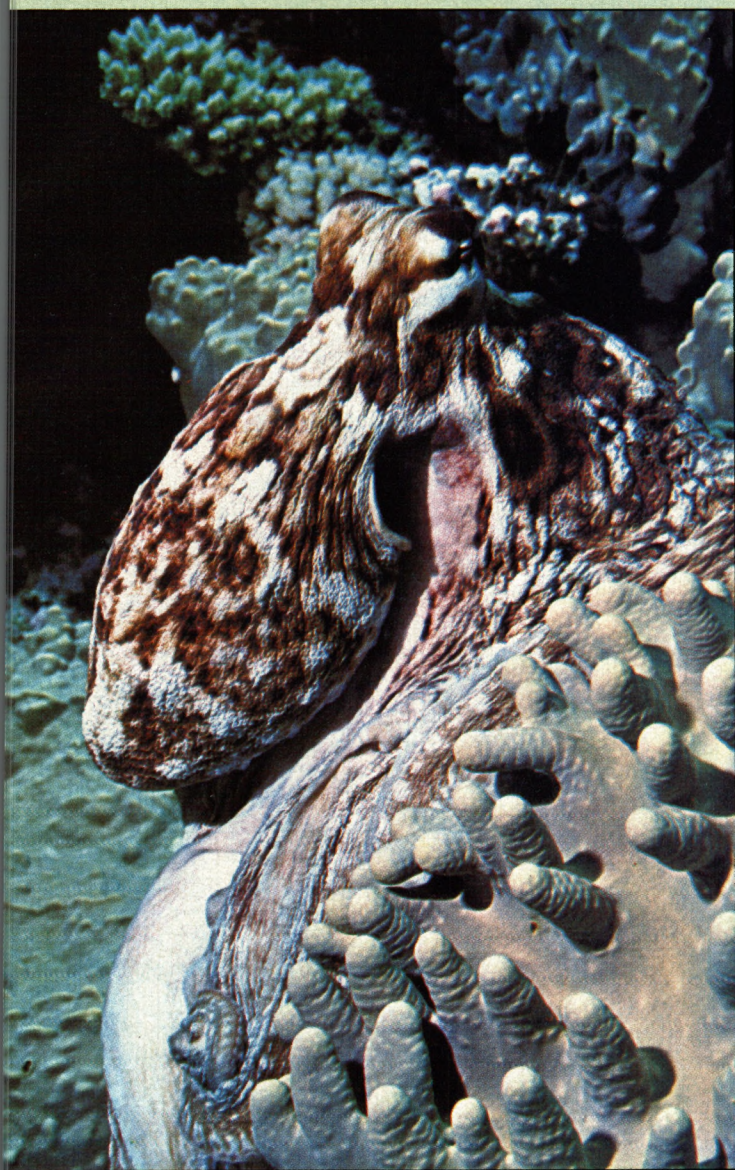
Bud Higdon



OCTOPUS



Carl Roessler



Carl Roessler

American Pacific coast near Seattle, Washington. The octopus of this colder region may grow to be 30 feet in diameter and weigh up to 130 pounds. These large octopuses are even more timid, tire more easily and possess less sucking power than their warm water octopus cousins.

Largely unchanged for the last 400 million years, the octopus belongs to the family of animals known as "cephalopods". The name is derived from the Greek words meaning "head" and "feet". Other cephalopods include the squid and the cuttlefish.

The octopus eats fish, crustaceans, mollusks and worms. Several species of octopus possess salivary glands which spit a venom capable of killing their prey. For instance, in a three pound *Octopus vulgaris*, this poison is powerful enough to kill an animal the size of a rabbit. Once the prey is paralyzed, the octopus will tear it apart and eat it.

Although the octopus' venom is not usually toxic to humans, two deaths from octopus accidents have been recorded. Both casualties occurred in Australia



Carl Roessler



Carl Roessler

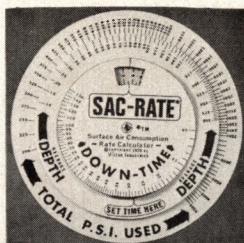
where the rare blue-ringed octopus lives. Although only four inches in length, this dangerous species possesses venom which causes respiratory failure, paralysis, and, on occasion, death. The toxin is so powerful that both deaths occurred within two hours of the encounter with the octopus. It should be added, however, other humans bitten by the blue-ringed have eventually recovered.

continued page 52

**NEW!! Increase your
Down-Time!!**

SAC-RATE* CALCULATOR

A precision graphic circular slide rule based on computer generated logarithmic scales. Overall log accuracy 2% with laminated lithographic printing on heavy gage polyvinyl plastic.



Quickly computes Surface Air Consumption Rate

Complete with simple instructions. Valuable mini-course on how to improve your down-time included FREE!

ONLY \$4.95 + .25 postage

WHAT DOES IT DO? In just seconds it easily computes a diver's aerobic efficiency (how well he breathes underwater) for different dive conditions. The Calculator translates dive factors into a single number representing a diver's underwater metabolic performance compared to that on the surface. A SAC-RATE* number can be likened to the EPA mileage rating applied to new autos.

WHY IS IT NEEDED? To a diver, knowing his underwater breathing efficiency can be compared to a driver knowing his car's miles-per-gallon of gas rate; the diver who knows his SAC-RATE* knows his underwater 'mileage' or performance capabilities. By noting his SAC-RATE* after every dive, a pattern will develop enabling him to predict his down-time at various depths for any given dive condition. Lack of adherence to the diving rule, "Do everything underwater in slow motion", will show up as a higher than normal SAC-RATE* for that dive and keynote the need for more efficient and relaxed diving. A SAC-RATE* number is a sophisticated measurement of performance — much more meaningful than, "I can last an hour on a tankful of air".

WHO NEEDS IT? Every diver who wants to be aware of his performance, know his capabilities and make the most of his dive time: For the experienced diver, the Calculator can be used to predict down-time for various dive conditions, rate his skill and compare himself to other divers and insure an equal buddy match (how often has the experienced diver cut his dive short because his buddy ran out of air 10 minutes before he did?). For the student, it provides an ongoing record of improved diving skills and proficiency. For the instructor, it provides a measurement of his students' capabilities and learning curve and points out students requiring special attention. For the in-experienced diver, it provides a yardstick against which to compare his growing dive experience and maturity, and gives him or her a goal to aim for.

TYPICAL SAC-RATES*: STUDENT ... 40 — 60; BEGINNER (less than 10 dives) ... 30 — 40; ADVANCED BEGINNER (10 — 20 dives) ... 20 — 30; EXPERIENCED DIVER ... 15 — 20; PROFESSIONAL DIVER ... 8 — 12

*Trademark of Vistar Inc.

Dealers welcome! **VISTAR Inc., BOX 14963, AUSTIN, TX 78761**

NEXT TIME OUT ASK YOUR DIVE BUDDY. "WHAT'S YOUR SAC-RATE*?"

Physiology for the woman diver in the next issue of *Sport Diver*.

NORTH ELEUTHERA

ROMORA BAY CLUB HARBOUR ISLAND, BAHAMAS

FEATURING:

- Deluxe accommodations - 4 days 3 nights
- 3 Gourmet meals daily
- All taxes, gratuities and transfers
- Round trip air from Fort Lauderdale
- Tanks, weights, and air
- Expert guides
- Friendly personalized service
- No surprises - No add ons
- Diving included

DIVE NORTH ELEUTHERA'S MOST
EXCITING REEFS AND WRECKS

ONLY **\$329.00**

CONTACT:



OMORCA LTD.

404/428-1588

P.O. Box 944 A Marietta, Ga. 30061

like to try **UNDERWATER PHOTOGRAPHY?**

Get this up-to-the-minute, step by step INSTRUCTION MANUAL on building a housing for ANY CAMERA.

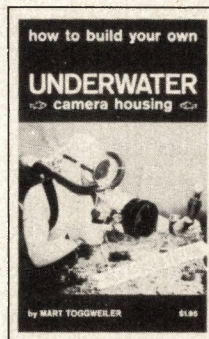
SIMPLIFIED DESIGN...DETAILS OF ALL CONTROLS...WORKING WITH PLASTIC...SOURCE OF PARTS & MATERIALS

A safe, cylindrical housing for professional results.

72 fact-filled pages, 60 illustrations
Published by **HYDROTECH**
Box 14444, Long Beach, California 90814

The full line of parts and material stocked by Hydrotech is catalogued within its pages.

ONLY
\$1.95



Scubapro Million Dollar Christmas Sweepstakes

Scuba diving is a sport for winners and every one who enters is a winner in the Scubapro Million Dollar Christmas Sweepstakes. Nothing to buy and only an entry form to fill in qualifies the person for a free gift from his local participating professional dive store.

First prize is a Datsun Lil Hustler. Second prize is an all-expense paid diving trip for two to Anthony's Key Resort on the island of Roatan in Honduras. Third and fourth prizes are TAD 42 Meter Offshore Kayaks.



Sweepstakes prizes are shown by (left to right) Jenny Sherman, Scubapro sales manager Mike Brock, Roy Brizz and Al Antone (on truck).

To enter the contest just visit your local participating Scubapro dealer and ask for a Scubapro Christmas Entry Form. Complete the form and deposit it in the store's Scubapro Sweepstakes Display. Drawings will be held in January, 1979 at the Diving Equipment Manufacturer's Association Show. One entry is allowed per dealer visit. Deadline for entries is December 24, 1978.

This contest void where prohibited by law.

Ohio Council Photography Contest

The Ohio Council of Skin and Scuba Divers is once again sponsoring a national photography contest.

Deadline for all entries is December 21, 1978 and the competition is open to all amateur photographers. Entry fee is \$4.00 (US or equivalent) for each unit entered. One unit is four prints or slides in any category or combination of categories. Make checks payable to the Ohio Council Photography Contest.

The categories for judging will be: Salt water prints; salt water slides; fresh water prints; fresh water slides; black and white prints; and surface slides depicting some aspect of the diver's world.

Mail entries to O.C.S.S.D.I. National Photo Contest, P.O. Box 572, Delaware, Ohio (USA) 43015.

NAUI's Women's Diving HELPLINE

By Jeanne Bear Sleeper

Are female divers more like sheep or rats? A joke needing a punch line? No! Depending on whether a woman's placenta transfers gases like a sheep or a rat's may finally answer the old question, "Should women dive while pregnant?"

Research is being conducted right now at a major universities that should finally lend some statistical credence to one side or the other of the "to dive" or "not-to-dive" question. Until this research is completed, the trend has been for obstetricians to proclaim "hang up your fins" the day pregnancy is confirmed.

With so much on the line, it's tough to condemn some physicians for their ultra conservative medical perspective. It is tough to give up diving for three-fourths of a year too, especially if instruction or reef guiding is your livelihood.

But, there is a whole world of "women in diving" beyond the thorny question of pregnancy. And that's where the NAUI Helpline fits in.

By way of further explanation, the NAUI Helpline is really an information retrieval service. There are many concerns that are unique to women in our sport. Because their physiological makeup and their psychological makeup is

different from men, there are some important questions to be answered. We don't know what effect birth control pills have on predisposing women towards a case of bends, or we don't know how many women diving accidents have been related to premenstrual tension. We don't know if menstruation has affected some of the cases of women's bends.

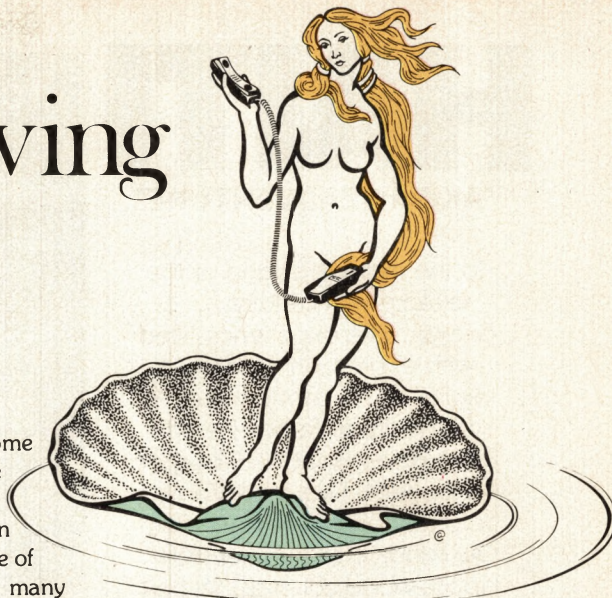
These are huge gaps of knowledge. Until recently, no one had ever tried to accumulate all of the scientific data on these questions. The reason being there wasn't interest, it's far flung, hard to find, and many research projects are only in the animal stages and have never been attempted on human beings.

Men in the sport have had the benefit of tens of years of research by the Air Force and the Navy in several major countries. Many of the "numbers" that we rely on in the sport were built for men — the decompression tables are the best example.

The Helpline was never intended to exclude men, just to find out more about women. By having one central place where men and women can go and ask questions, go to find answers, or go to just sit and talk with someone with a sympathetic ear is important. These are some of the roles the Women's Helpline hope to fulfill.

As a spinoff the Helpline has also found that some women share many common problems with all other small people. By gathering data on which equipment is available and fits the best, which techniques work the best, we hope to make diving easier and more enjoyable for all small people today; young, old, male or female.

The Helpline is operated on a volunteer basis. That's one of the things that makes it so exciting. There are many tasks for many volunteers at all levels of involvement. NAUI instructors Cheri Boone and Susan Bangasser have taken the lead in conceiving and organizing the Helpline. They volunteer time to draw up surveys, write letters, do mailings and answer all the correspondence. As Special Projects Director at NAUI Headquarters, I



coordinate the Helpline's many projects.

It takes an issue with some substance and a need to be met to stir involvement. The Helpline offers both to divers and instructors alike. There are volumes of questions to answer, questions to dream about and answers to distribute. This is the work of the Helpline: to get the people with the questions together with the people with the answers.

Hopefully some of the information generated by the Helpline that relates to all divers, but particularly people with special needs will spark the remainder of the diving community to ask the same questions of themselves. Some early Helpline statistical research showed that over 20% of the female NAUI instructors were employed full time in science related or medical fields; that 85% are ages 21-35 years; that 53% of the women made 20-79 dives in 1976. Hopefully the Helpline will encourage the men to seek some of the same information about their peers. Enthusiasm is contagious. The Helpline wants everyone to catch the bug.

The Helpline is multifaceted. Its focus includes areas ranging from psychological and physiological needs of women to the problem of getting researchers and willing subjects together. The Helpline also works with manufacturers to recommend and review gear ideas and modifications to existing products. Perhaps more importantly, Helpline volunteers have their ears to the ground and are constantly monitoring the pulse of need in the industry.

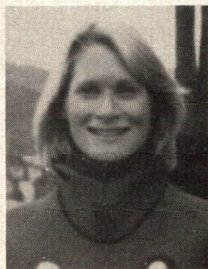
Current research projects being assisted by the Helpline include everything from Sea Grant studies in Michigan, to conferences in Boston to medical aspects surveys with worldwide participation.

An overview of current projects includes:

continued next page



Jeanne Bear Sleeper (left), Cheri Boone (lower left), and Susan Bangasser (below).



HAITI

"TAKE A SEADVENTURE"

To the incredible land of the seventeenth century . . . a cultural/dive experience filled with excitement. 5 days/4 nights at the comfortable, A-frame Taino Beach Resort. Three dives/day (tank, bacpac included). Two meals/day, Saturday and evening in Port-Au-Prince (iron market-straw goods-wood carvings). Airport transfers.

\$462.00 plus airfare

AVANT GARDE TRAVEL

1801 Avenue of the Stars
Suite 94, Century City
Los Angeles, CA 90067

TOP OF THE BAHAMAS WALKER'S CAY

FEATURING:

- Deluxe accommodations - 4 days 3 nights
- Gourmet breakfast and dinner
- All taxes, gratuities and transfers
- Round trip air from Fort Lauderdale
- Tanks, weights, and air
- Expert guides
- Friendly personalized service
- No surprises - No add ons

DIVE ONE OF THE MOST BEAUTIFUL REEF AREAS IN THE BAHAMAS.

ONLY \$289.00

CONTACT:



OMORKA LTD.

404/428-1588
P.O. Box 944 A Marietta, Ga. 30061

HELPLINE

continued from
previous page

Dr. Susan Bangasser, 12724 Valley View Lane, Redlands, CA 92373 — Medical Aspects of Women Divers Survey — participants still needed.

Cheri Boone, 20122 Imperial Cove Lane, Huntington Beach, CA 92646 — Menstruation and Pre-menstruation Tension Survey — participants still needed.

Jeanne Bear Sleeper, NAUI Headquarters, P.O. Box 630, Colton, CA 92324 — IQ-Ten Conference and Helpline Coordination — volunteers wanted to participate at IQ-Ten Women's Workshops and volunteer their talents to the Helpline.

Margie Bolton, 3311 NW 30th Avenue, Gainesville, FL 32605 — Pregnancy and Diving Survey and Research — participants needed.

Dr. William Fife, Texas A & M University — Animal Research on Pregnancy and Diving in progress.

Women in Diving Conference sponsored by Boston's Aquawomen and NAUI, October 21, 1978, Wellsley College Science Center, Wellsley, MA. Information and tickets from Valerie Costelloe, East Coast Divers, 213 Boylston, Boston, MA 22034 — Conference participants wanted.

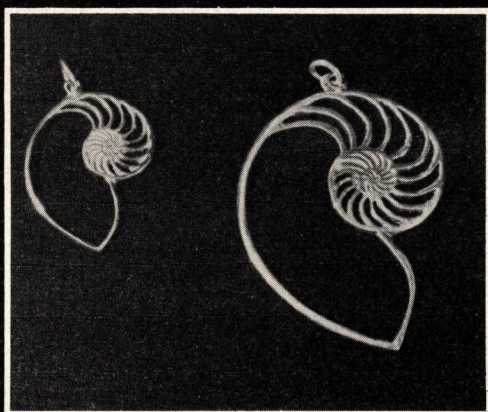
Dr. Eleanor Crown, 338 E. Kingsley, Ann Arbor, MI 48104 — Sea Grant research on a profile of female divers in the Michigan area is completed and soon to be published.

Helpline Bibliography — a joint project of many Helpline volunteers to assemble a complete bibliography of related women in diving literature, fiction, non-fiction, and scientific.

The Helpline was born of frustration — from lack of information, from worn out old wives tales, from needs that were ignored. In a short time the Helpline has matured. It has expanded its horizons and concerns to include not only the questions of women, but also the problems of small people, handicapped divers, young divers, team teaching assets and liabilities and public relations in all of these areas to the diving community.

Helpline volunteers' heads and hearts are aimed in the right direction. Now they need to be fed with enthusiasm and support by new volunteers and the rest of the sport. The Helpline has a simple purpose — to get people with questions together with folks with answers. A giant task. Won't you help?

SPORT DIVER'S NEW ADDRESS 444 BRICKELL AVE., SUITE 250 MIAMI, FL 33131 305/374-1300



Sea Symbols®

by Robert L. Straight

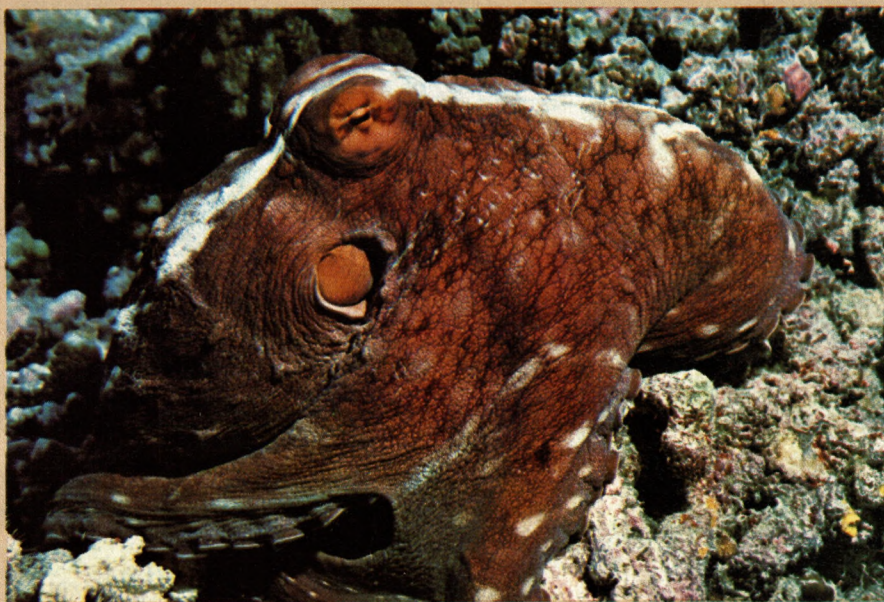
Nautilus Shell (Actual Size)
Sterling Silver 14K Gold
Small - \$22.00 \$41.00
Large - \$34.00 \$109.00

About the Artist

A unique combination of diver and sculptor, Robert L. Straight using his knowledge of the underwater world has created a truly unique collection of jewelry and sculpture from the sea. Fashioned for those divers who want only the very best and have the highest regard for the underwater world.

For catalog send \$1.00 to: Robert L. Straight
8439 Barkley, Houston TX 77017 713/643-4051

An Octopus OCCASION

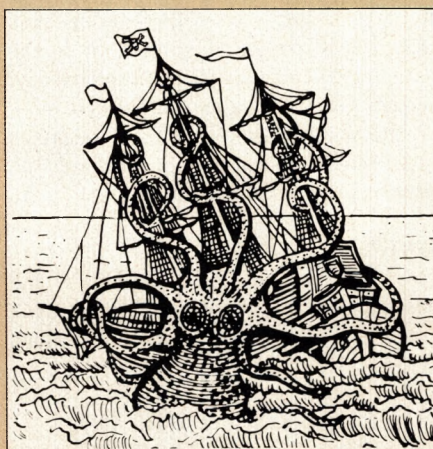


Carl Roessler

by Paul J. Hill

The next time you catch an octopus, turn it into a special occasion by serving an exclusive octopus dinner for two. Set the mood with candles and good wine, then lead off with a refreshing octopus salad to tease the palate, followed by a small bowl of octopus mushroom chowder. For the entree, bring in a hearty octoburger steak. This steak is so sensuously delicious it's almost sinful to eat. Accompanied by soft lights and romantic music, it can lay a path straight to the boudoir.

The octopus is actually a mollusk and has many close relatives who are familiar to our plates and palates such as abalones, clams, scallops, and oysters.



Although octopus is generally neglected on the menus of western nations, it is highly prized in many foreign countries. In Japan, octopus is commonly served in sushi bars. Octopus sushi is a small ball of rice with thinly sliced octopus on top. Octopus miso salad is a favorite too. Octopus is also a common food in Hawaii, eaten raw with sushi, dried and salted with braided arms, or cooked and sliced in a miso mixture.

To most people, this eight-legged member of the shellfish family is repulsive. This is probably what led to the exaggerated stories of evil deeds. The octopus, formerly called a devilfish, has been given a reputation for attacking divers and of growing huge enough to threaten ships. A California newspaper

The most dangerous member of the octopus family is the blue-ringed octopus. Its range includes Australia and the South Pacific. Although very small, this cephalopod's bite can kill in less than two hours. Only two fatalities have been definitely traced to the creatures; both occurred in Australia.



Walt Deas

once printed a drawing supposedly of an octopus, which represented all the arms terminating in pincers, and the mouth with a pair of huge jaws or a beak like an eagle, but set with numerous teeth. Most octopuses are small and harmless. In fact, the octopus is rather retiring and is not so likely to attack you as is your family dog.

Actually, the creature one should avoid is not the monstrous devilfish, but a tiny octopus the size of a quarter with an arm spread of only 3 or 4 inches. This little octopus was found in June, 1967, by a soldier who was exploring tide pools near Sydney, Australia. He placed the colorful little octopus on his arm and it bit him with its tiny beak. The soldier died within 90 minutes despite resuscitation efforts and external heart massage.

The animal responsible was *Hapalochlaena maculosa*, commonly called the blue-ringed octopus. When disturbed, its normally dark rings become an iridescent blue. These bright colors are no doubt what entices people to handle the species.

This little blue-ringed creature has been properly described as "the world's most deadly octopus". One knowledgeable Australian doctor considers *Hapalochlaena maculosa* far more dangerous than the Pacific marine snakes.

All octopuses have beaks, but most do not bite as it is difficult for them to position themselves so that the beak can come in close contact with a predator. Even a bite from a big octopus will not puncture the skin through a wet suit, at most it will leave two small bruises and a fringing red ring.

Recently, an infestation of octopuses off the eastern coast of Australia has become a menace to the lobster fisheries that abound in that area. Research has revealed that protective shark nets placed along bathing beaches have killed so many predators of the octopus that the young octopuses are now proliferating. Once again we see how man, in tampering with the delicate balances established by nature, has tipped the scales in the wrong direction.

MATING

The reproductive methods of the octopus are decidedly unique. At breeding time, one arm of the male becomes

enlarged and modified as a copulatory organ. He then charges this arm with a packet of spermatozoa from his generative orifice. During copulation, the arm is placed under the female's mantle-skirt and into her mantle cavity where the spermatophores are released.

The act of fertilization accomplished, the male octopus retires to repair his damaged arm. The female, however, has before her a long and sad vigil. She is one of the most diligent and faithful mothers in the sea. After she produces the eggs, the mother octopus will care for them until they hatch and will not venture away in search of food. It takes four to six weeks for the eggs to hatch. When the final egg hatches, the mother octopus dies.

CATCHING AND HANDLING

An octopus can be caught by hand or with a spear equipped with a slip tip. However, a big octopus could end up with your spear if you can't pull the tentacles from the bottom. Grab the octopus hard around the neck. With a mighty heave, snap him off the bottom. Don't let any tentacles wrap around a rock unless you can lift the rock too. On the way to the surface, smooth the tentacles down away from the head to keep them under control. Tear the tentacles off your arms and legs

Ever try to put an octopus in a game bag underwater?

as fast as you can. If you let the tentacles work up to your shoulder, the octopus will pull himself onto your back and you'll really be tangled up. Your next move on the surface would be to yell to your buddy, "Get this thing off my back". He may not be able to help you because he'll be laughing so hard he will have flooded his mask.

There is an ancient and effective method for calming the octopus. While smoothing the tentacles down, bite (with your teeth) hard, right between the eyes. You will be biting a nerve module which should partially paralyze the octopus. Don't try the biting number if the tentacles are not under control. A tentacle could slip under your mask and into a nostril.

Ever try to put an octopus in a game bag underwater? Very difficult. And if you do get him in, he'll come right back out unless the little devilfish is comfortable or paralyzed. The tip of the tentacles will work their way out the top of the bag or through a hole in the side and continue until the whole animal is out. In fact, a 40-pound octopus was seen pulling himself through a hole the size of a silver dollar. The only octopus that you can be sure will stay in your bag is a dead one.

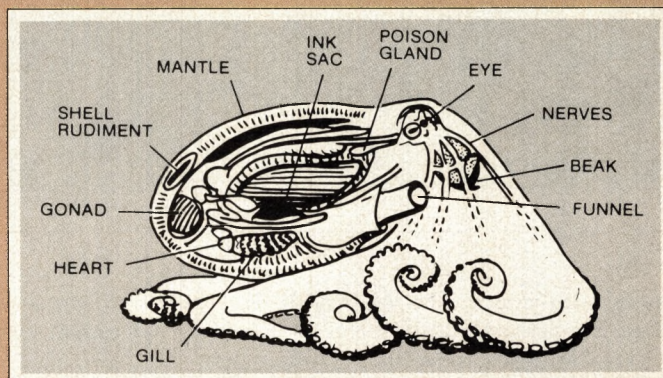
TENDERIZING

Like any meat, octopus must be prepared properly and the most important part of the preparation is tenderizing. The Greek method of tenderizing an octopus is to beat it against a large rock many times. Tenderizing can also be accomplished by beating the octopus with a mallet. One sure way of tenderizing is to first freeze the octopus (live, uncleaned, unwashed) in a plastic bag. When you're

ready to use the octopus, take it out of the freezer and drop it, still frozen, into liquid — about half vinegar (rice vinegar is best) and half water — just enough to cover

You may also use wine. Cover the pot and bring it to a boil. Boil two minutes for a small octopus, about five minutes for a medium (one that you can get your hand half-way around when it's bundled into a ball), and about ten minutes for anything larger than that. Turn off the heat and let it cool in the juices — don't rush the cooling. When cool, hold the octopus under cool running water and skin. The skin will come off easily. Now clean by cutting open the head, turning it inside out, and removing

Parts of this article are excerpted from *THE EDIBLE SEA* by Paul and Mavis Hill, published by A. S. Barnes & Co., Inc. For autographed copies of book, contact Educational Services; P.O. Box 15145; Long Beach, CA 90815.



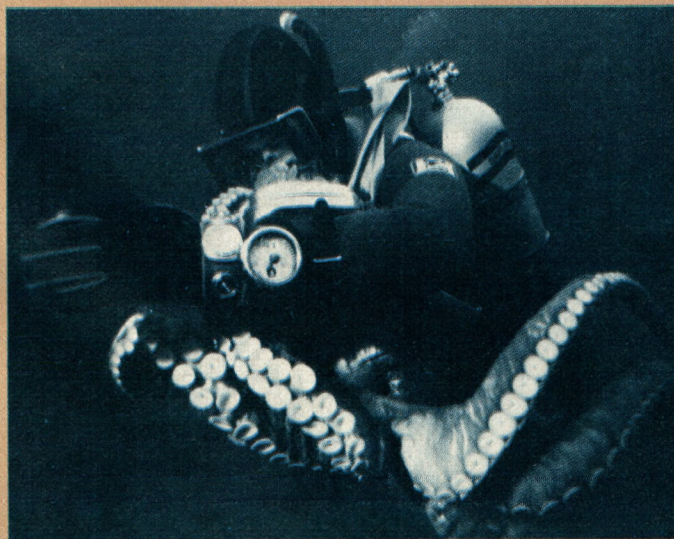
the viscera and beak. No pounding is necessary with this method and the octopus is ready to use in any octopus recipe. When properly cooked, the meat is very tender.

OCTOPUS RECIPES

The flavor of the firm, white flesh of the octopus resembles a combination of clam, abalone, and tender lobster. If you care to experiment, octopus can be used successfully in many recipes for these three seafoods. The following recipes are for your special octopus occasion.

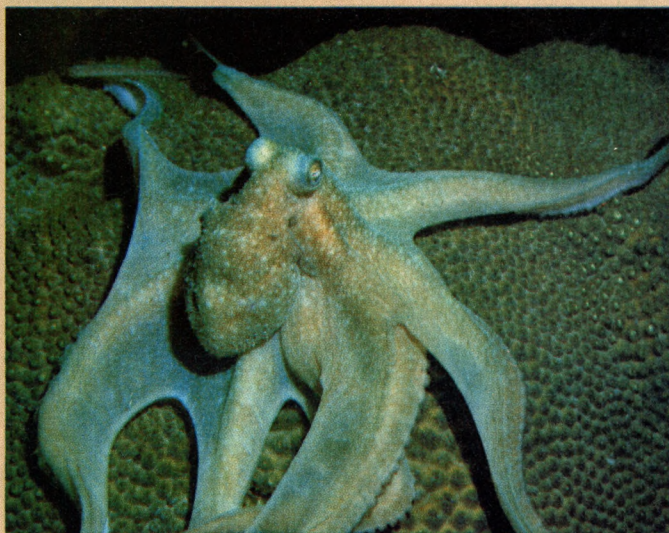
OCTOPUS SALAD

This Japanese recipe results in octopus slices coated with a sauce and



Joe Liburdi

Usually timid, octopuses will sometimes allow people to handle them. The smaller ones make excellent aquarium pets although they tend to escape if the tank is not properly covered. Some species have the ability to change colors with their surroundings, providing them with a natural camouflage mechanism.



Carl Roessler

One way of tenderizing is to freeze the octopus (live, uncleaned, unwashed) in a plastic bag.

served with lettuce. The flavor is subtly sweet and delicately tart, but only enough to tease the palate and enhance the flavor of the octopus. This salad should sharpen your appetite for the octoburger steak that will come later. Miso, one of the ingredients in this salad, is a product made of fermented soybeans and rice and is commonly found among Japanese market products.

½ lb. octopus meat, precooked
1 tablespoon miso
1 tablespoon sugar
2½ tablespoons vinegar
¼ teaspoon Accent (monosodium glutamate)

Slice octopus crosswise very thin. Make sauce by thoroughly mixing miso, sugar, vinegar, and Accent. Stir to make a soft paste. Stir sauce into octopus slices until each piece is well coated. Refrigerate.

Toss with lettuce and other vegetables if desired. Serves two people.

OCTOBURGER STEAK

This is the premier delight of octopus fanciers. Makes two medium-sized steaks or four burgers.

¼ lb. octopus meat, precooked
¼ lb. lean ground beef
1½ oz. cheddar cheese, shredded
¼ teaspoon garlic salt
2 teaspoons instance minced onion

Run the first three ingredients through a meat grinder, add last two ingredients and mix well. Shape into burgers and fry for 1½ to 2 minutes each side in butter.

All octopuses have beaks but most do not bite.

EASY OCTOPUS MUSHROOM CHOWDER

10¾ oz. can condensed cream of mushroom soup
½ cup chopped onions or 2 tablespoons minced onion
1/3 cup bacon bits or 6 slices bacon, crumbled
2 tablespoons soy sauce
2 tablespoons butter
4 oz. can (½ cup) mushroom stems and pieces
¾ lb. octopus meat, precooked and minced or ground

In a large saucepan, combine all ingredients except mushrooms and octopus. Heat to simmer point, but do not boil, then add mushrooms and octopus. Simmer 2 minutes on low. Serves four.



Octopus can be used in a number recipes. It is easily prepared and has a delicate flavor. Octopus is a true delicacy in both Europe and Japan, where it's eaten along, with vegetables or as a chowder.



Paul Hill



ATTENTION DIVE RETAILERS

Don't Miss the Third Annual

DEMA TRADE SHOW



January 20-23, 1979
New Orleans, Louisiana

For the third consecutive year the Diving Equipment Manufacturer's Association (DEMA) will hold an all-industry trade show. This year the convention will take place in the historic and entertaining city of New Orleans, Louisiana.

The DEMA Trade Show is the largest all-scuba show with over 150 exhibits occupying 30,000 square feet of space.

The diving equipment manufacturers will be displaying the latest innovations for the underwater world. In addition there will be clinics designed to assist the dive store proprietor and his employees.

The show will be held at the Grand Hotel. Room rates for singles are \$27 per night, doubles are \$31 per night.

If you're interested in expanding your business outlook and future profits, you should attend the Third Annual DEMA Convention.

Simply complete the registration form and mail today. (Admission is limited to bona fide diving retail store owner/operators, their employees and members of the retail sporting goods trade.)

Registration fee — \$10 per person.

Registration Form

(Limited to scuba trade businesses.)

Name of store owner

Name of store

Street address

City

State

Zip

Phone

When registering employees, indicate which are buyers, which are guests.

Guest/Buyer _____

Guest/Buyer _____

Guest/Buyer _____

Guest/Buyer _____

Guest/Buyer _____

Xerox, complete this form and mail to:

1979 DEMA Trade Show

**P.O. Box 4067
Irvine, CA 92716**

Jewelry from

Robert Straight



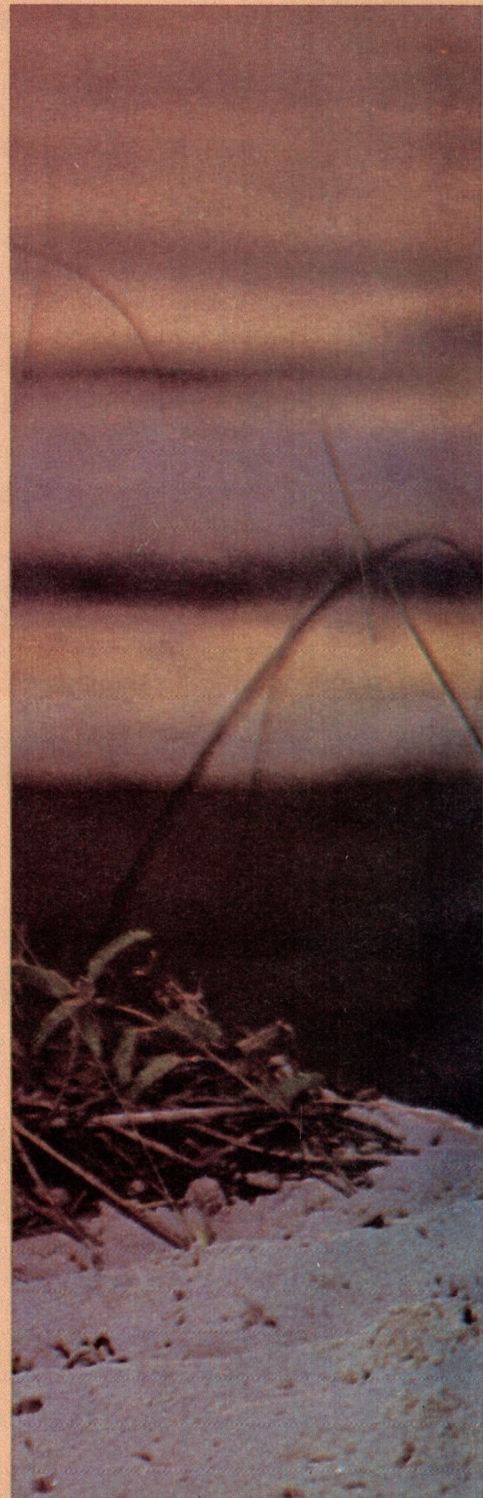
STEVE BLOUNT

"I picked up a copy of Cousteau's *Silent World* about 20 years ago," says Robert Straight, "At the time I couldn't even swim. By the time I finished it I was hooked. I started diving when I was 19 and do it every chance I get." Straight is also a NAUI instructor and creator of the *Jewelry from the Sea* series. His imaginative marine designs are executed using the lost wax casting method, a process perfected by the Egyptians 4,000 years ago. Straight carves a facsimile of the piece in wax. This is embedded in plaster. When the plaster has hardened it is placed in a kiln at high temperature and the wax is vaporized, leaving a cavity in the shape of the piece. The cavity is then filled with molten metal and left to harden.



STEVE BLOUNT

The designs, Straight says, are his attempt to communicate his feelings about diving, "that feeling of calm, placidity and space that you can't get anywhere else." For divers they evoke fond memories of an enjoyable sport. Others simply appreciate the results of Straight's finely honed craftsmanship. Either way, Robert Straight's jewelry is a beautiful summation of his love for the sea.



the sea



BENEATH THE SEA

continued from page 41

Of particular interest to scientists has been the intelligence of the octopus. Although many scientists dislike the use of the word "intelligence" when dealing with animals, results of experiments with the octopus are quite impressive. In his book *Octopus and Squid — The Soft Intelligence*, Jacques Cousteau described several tests performed on the octopus by scientists in the laboratory and the ocean.

In an open ocean experiment, an octopus was presented with a lobster inside a glass jar sealed with a cork stopper. This offered a new and unusual problem for the octopus. The octopus could see the lobster but when he tried to touch it he met the glass barrier. After repeatedly exploring the glass jar, he finally determined that the way to the lobster was through the cork stopper. He pulled the cork stopper, reached inside the jar and removed his meal.

The life cycle of an octopus begins with an elaborate mating process between a male and a female octopus. Once the mating is completed, the female octopus goes into isolation. One to two months

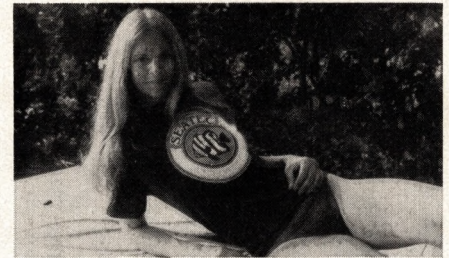
after fertilization, the female octopus lays from 150,000 to 200,000 eggs during a one week period. The female octopus is fertile only once during her lifetime, while the male octopus is free to mate again if he finds a willing female. After the female octopus has laid her eggs, she will not eat again. She will guard her grape-like clusters of eggs constantly against predators and clean them by aerating the eggs with jets of water.

Even with this meticulous care, the mortality rate among the newly hatched octopuses is extremely high. Only two millimeters long (1/12 of an inch) when hatched but already capable of producing a spurt of ink, most are eaten quickly by fish hovering outside the nesting place. Of the 200,000 eggs only one or two is believed to ever reach maturity; the others will take their place in the food chain of the sea by providing nutrients to other forms of life.

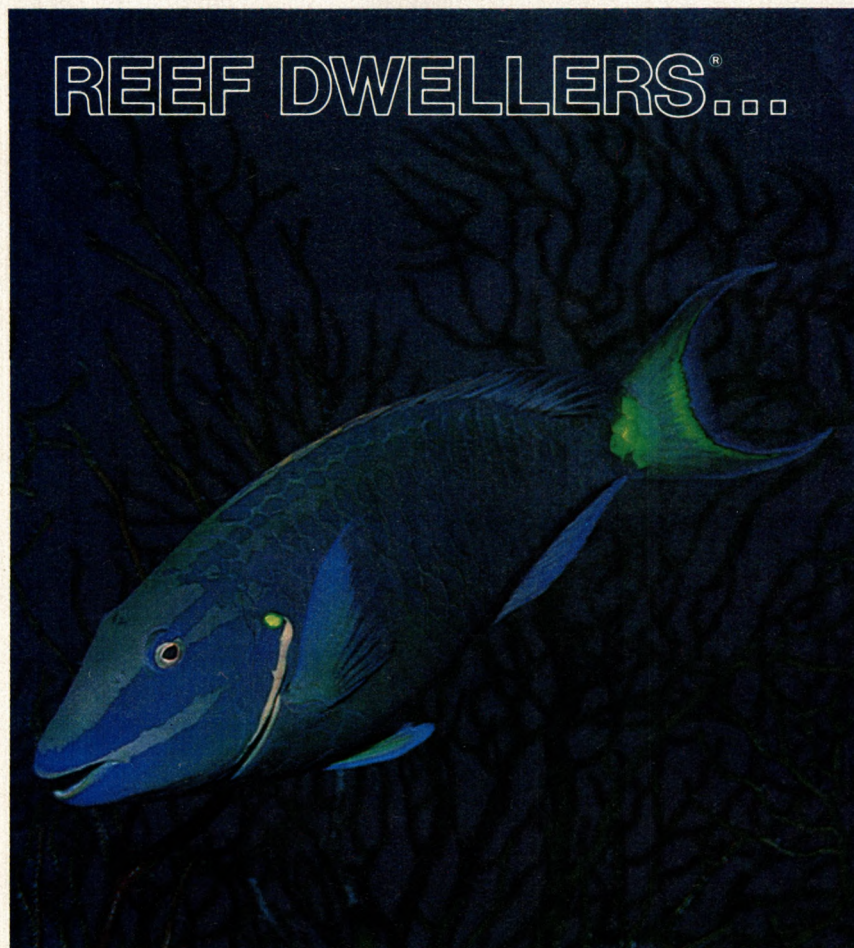
The entire incubation period lasts several weeks. Baby octopuses who survive the first few hours increase their weight by 20% with each passing day. The mother octopus, however, will never see them reach maturity. Weakened by the long period of incubation in which she goes without nourishment, the mother octopus dies a few days after the eggs hatch.

Far from the man-eating monster depicted by Victor Hugo, the octopus provides an important function in nature's scheme by providing food for man and fish alike. Hopefully, with our added understanding of the octopus, man will come to regard this creature in its true light: the most intelligent invertebrate in the marine kingdom.

Seatec's Blue Fin Bonus



A free t-shirt will be packed in every box (model not included) containing Seatec's blue fin stabilizing jacket. To get yours, stop by your local participating Seatec dealer between November and Christmas and purchase a blue fin jacket. When you open the box, a high-quality cotton shirt bearing the Seatec logo will be inside. The shirts are navy blue with white and blue design. It's Seatec's way of saying thank you and happy holidays.



A superb 1979 calendar, presenting 13 splendid underwater $10\frac{1}{2} \times 10\frac{1}{2}$ full-color photographs, suitable for framing, by award-winning photographer, Feodor Pitcairn.

These superb scenes with accompanying descriptions convey the wonder and beauty of a living reef system.

The perfect gift for anyone who loves the ocean and its inhabitants.

©FeoPhoto, Inc., 1978

FeoPhoto, Inc.
Jenkintown Plaza—Sixth Floor
Jenkintown, PA 19046

Please send me _____ calendar(s) at
\$6.95 each.

(Pa. residents add 6% sales tax; foreign orders
add \$1.50)

☐ Check or money order enclosed

Name _____

Address _____

City/State/Zip _____



GRENADA

WRECKS OF THE SOUTHERN WINDWARDS

*Photography and story by
C. Leroy French*

The Windward Islands are like beads of jade on an invisible string. Most are smooth and well worn by the ceaseless flow of European and American tourists, but Grenada, the southernmost island, is still rough and virtually untouched by the vacation adventurers.

Grenada is exactly 12 degrees north of the equator, 100 miles north of Trinidad and 120 miles north-northeast of Venezuela.

The words windward and leeward have always figured in the nomenclature of the Caribbean. Originally they were nautical terms, windward being the point from which the wind blows, leeward being the opposite point. The prevailing winds in this region come from the Atlantic and blow either straight west of from southeast to northwest. The east coast of any given island is windward and the west coast leeward. Groups of islands were soon distinguished by these names. The Spanish called the entire chain of the Lesser Antilles the *Islas de Barlovento* and the Greater Antilles the *Islas de Sotavento*. The French adopted this system and referred to the *Isles du Vent* and the *Isles Sous le Vent*.

The first Europeans on Grenada were French. Jacques Dyel du Parquet visited the island in 1650 with 200 men. Finding the place overrun with Carib Indians, du Parquet followed standard procedure, initiating a war of extermination. The Indians were beaten back from the lower areas and isolated in the mountains along the northern coast. Trapped and starving, the last survivors joined hands and threw themselves into the ocean from a cliff called *Morne des Sauters*.

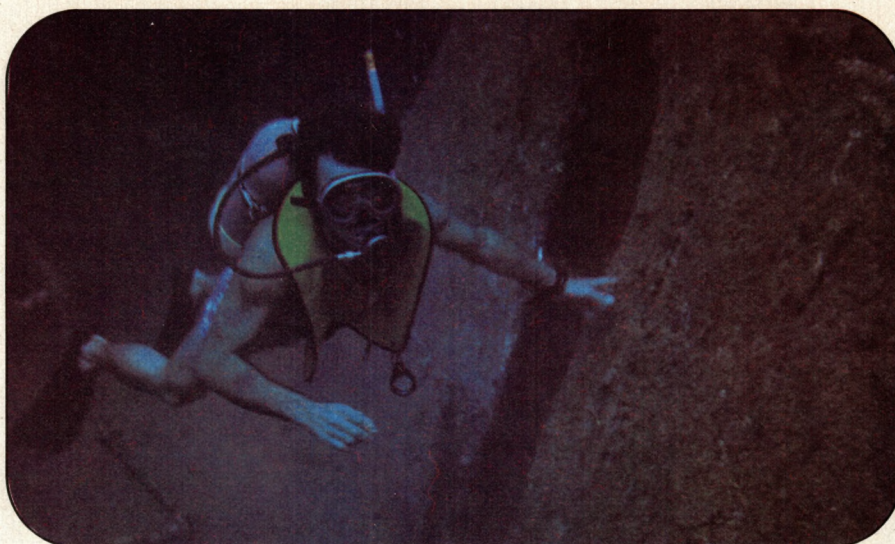
Landing at Pearls Airport aboard a Leeward Island Air Transport plane, you will immediately notice the gentle odor of spices that permeates the island. Grenada's main export items are spices, ranking second in the world in the production of crops such as cinnamon.

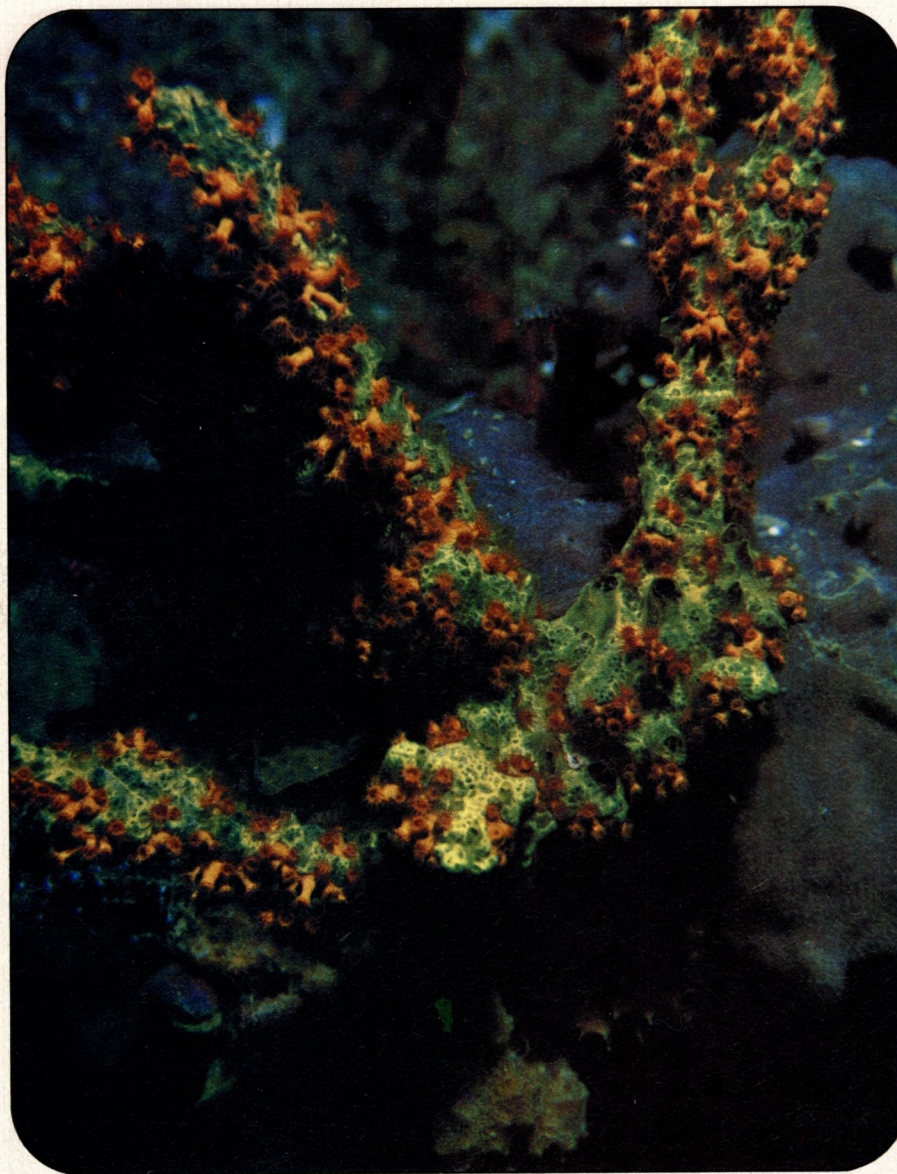
As the trading ships of the Caribbean came to Grenada over the years to pick up spices, they left behind a legacy for the modern diver, the bleached and broken hulls of the unfortunate and the foolish. The reefs and rocks around Grenada have also collected a choice selection of pleasure craft — sleek sailing hulls and larger cruise vessels.

One of the best reef dives takes you over the wreck of the *Buccaneer*, a two-masted schooner which lies at the base of the drop-off in 75 feet of water.



The harbor at St. George's (preceeding page) is bordered by narrow streets and European-style buildings. Grand Anse Beach (opposite) is a three mile strip on the coast. There are a number of excellent hotels here with accommodations in a wide range of prices. The glowing edges of the sponge at right exhibit bioluminescence, a natural light phenomenon not yet fully understood. Divers on the Bianca C (following pages) explore the vast interior of this virgin wreck. Less than 50 divers have seen this 600-foot cruise ship.





The boat has only been down for three years, so it is completely intact except for the masts. Already colorful growth covers the steel hull, matching the bright hues of the sponges and sea fans on the reef above.

Because there are so few tourists black coral is still abundant on even the shallow reefs. The guides on Grenada are very protective of the reefs and growth, encouraging visitors to do their souvenir hunting in the craft shops topside.

The water temperature around Grenada is 76° F. to 81° F. year round. Visibility varies from 50 to 125 feet, depending on the season. During the rainy season, visibility decreases in some areas due to suspended particles washed in to the ocean from shore. The leeward side of the island remains relatively clear even during this brief period, providing excellent alternate dive sites should the weather prove uncooperative.

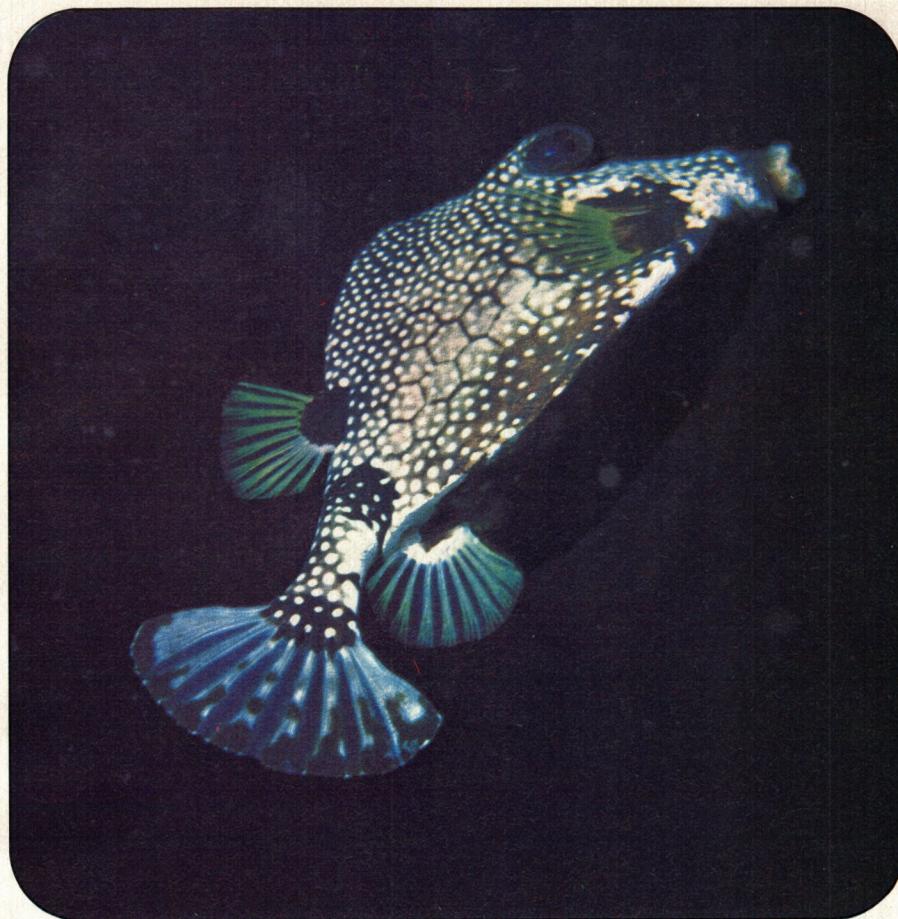
The leeward side also has St. Georges, the island's main settlement. Built around a natural harbor, the city has a Mediterranean flavor. The cobblestone streets are lined closely with southern European-style buildings containing small shops. A dozen excellent outdoor restaurants line the waterfront and from the tables you can watch as the local fishermen pull in during the afternoon, unloading their boats on the dock. A short walk from the waterfront will bring you to the market square in the middle of town where native Grenadians gather to trade for food and other essentials.

The premier dive site of Grenada lies off the leeward side of the island, towards the southern tip. In 1952, the passenger liner *Bianca C* caught fire while anchored in St. Georges harbor. There was no effective way to extinguish the fire, so after evacuation of the passengers and crew, the 600-foot liner was towed out of the harbor and eventually sank.

The only items salvaged from her were the two propellers and the wheelhouse instruments. Everything else is intact — chairs and tables in the dining room, recreational equipment, galley implements and hardware. The *Bianca C* settled upright, her keel resting on the even sand bottom just as though she were afloat and operating.

Although the bottom here is at 180 feet, the average dive on the *Bianca C* is only 100 to 120 feet — well within the range of most sport divers. You can't see the ship from the surface, but as you descend along the anchor line,





you begin to make out the bulk of the superstructure which rises 65 feet above the main deck.

The *Bianca C* has never been fully explored. About 50 divers have seen the wreck yet no one has ever charted the vast interior of the ship. Growth has covered the *Bianca*, camouflaging the sharp angles and bare metal with a shroud of glowing organisms. Black coral bushes cling to the rails along with sea fans and numerous varieties of soft coral. They move slightly with current generated by the divers' fins as they swim towards yawning doorways.

Once inside the labyrinthine passages open off into ballrooms, staterooms, officers cabins and continue ever deeper into the heart of the vessel. The fire-blackened interior is covered now with a thin growth of algae, masking the bulkheads in a mottled orange-brown.

Almost every variety of Caribbean fish has been spotted on the wreck: Rays, tropicals, wrasse and jacks. Inside it is not unusual to encounter very large jewfish languishing in a stateroom, aggressively protecting their little domain from outsiders. The wheelhouse, promenade deck and equipment areas are all open to exploration, more territory than can covered in a single dive so that most groups that see the *Bianca* return several times.

As with the reefs, divers are not allowed to take anything back and spearfishing on the wreck is prohibited. This stringent protection has kept the wreck in its original condition, a gem for future divers to enjoy.

Grenada's location at the bottom of the Windwards has helped it retain the anonymity that keeps the island out of the rush and hustle of the tourist thoroughfares. While thousands of others are shuffled up through the more northerly islands, a small trickle find their way to Grenada. Most of them leave satisfied that they have found a little bit of the tropical paradise they came seeking. 🐠



**SPORT DIVER
MAGAZINE/
OMORKA
LTD.**

AT LAST

PLANET WATER '79

**FILM
PRESENTATION**

Two hours of exciting underwater visuals provided by Master of Ceremonies, Rick Frehsee and *Sport Diver Magazine* publisher, Richard H. Stewart, followed by a good ol' fashioned, "Get Acquainted Social".

Planet Water '79 will be featured in the following cities: Miami/Orlando, FL; Atlanta/Valdosta/Albany, GA; Louisville/Lexington, KY; Knoxville/Nashville, TN; Cincinnati/Columbus, OH; Columbia, SC.



See the next issue of *Sport Diver Magazine* for further details, time and location, or write below to:



OMORKA, LTD.,
Dan Conaway

P. O. Box 944, Marietta, GA 30061.



The world's largest preview of scuba diving equipment, related products, accessories and services has been scheduled for January 20-23, 1979, in New Orleans. This is DEMA's annual Trade Show and Convention, which is a spectacular exhibition of underwater/ scuba equipment for the dive store dealer. According to DEMA (Diving Equipment Manufacturer's Association), this year's exhibit space had been completely sold out by September, an indication that the show will be the biggest, ever. All major American manufacturer's of scuba diving equipment will be there, as will European manufacturers and marketers. Exhibits will be spread over 33,000 square feet in the New Orleans Grand Hotel.

The DEMA show will feature instructional seminars (PADI, NAUI, NASDS), equipment demonstrations and repair clinics. Scheduled events include a PADI breakfast, a Saturday evening cocktail party and film festival which will headline Dick Anderson, one of diving's funniest filmmakers. Dick will show his two classics, *Mac the Dog*, about a Springer spaniel that dives, and *Gold from the Winfield Scott*, about two zany divers who scramble for gold coins from a sunken paddlewheeler off California.

Dive tour agencies will be represented, and so will publications that focus on the sport of diving. There will be advice and tips for the dive store retailer, to aid business. The dealer will not only be able to preview the 1979 lines of equipment, to see what's selling, but he'll learn the latest instructional techniques, find out about dive tours that the shop can participate in, receive useful information about equipment maintenance, and talk directly with the manufacturers.

New Orleans, one of the most exciting cities of the United States, should be another attraction for the dive store dealer who is thinking of attending DEMA's Trade Show. This famed city is noted for its French Quarter and fabulous Bourbon Street, Creole homes iron-lace balconies, Dixieland jazz, great restaurants and exciting night life. New Orleans also offers antebellum homes, plantations, the Vieux Carre, Superdome — and Ol' Man River — the Mississippi. The host hotel for the DEMA show is the Grand Hotel, which is located on historic Canal Street — only a quick walk away from the French Quarter. DEMA has also arranged for an "overflow" situation with several other hotels nearby, some of them in the French Quarter.

No retailer of sporting goods or dive equipment will want to pass up this opportunity to get an up-to-date insight as to what is selling and what will help the dive store business. If you, the dive store dealer, have not registered for the show yet, here's how you do it: Fees for diving dealers, retail sporting goods dealers and their guests: \$10 per person. O.E.M. Accounts, vendors to manufacturers, sales reps looking for lines, etc., are registered as Guests of the Show for a fee of \$25 per person. Once you have registered, with fees sent to DEMA, you'll quickly receive your badges, drink tickets, the agenda of planned activities. Plus, independent travel agencies will send you information about tours in New Orleans, as well as descriptions of diving tours after the show. You'll also receive hotel information so that you can make arrangements for your rooms directly with the Grand Hotel. Register today, with DEMA, P.O. Box 4067, Irvine, CA 92716.

EVENTS

Aqua Space '78

Encouraged by the success of its first festival, Aquatic Exploration and Research Associates (AERA) will be celebrating its second annual festival at Aqua Space '78.

AERA recently concluded a successful film making workshop at Tobermorey, Ontario under the direction of the award winning professional film maker, John Stoneman of Mako Films. This led to a collaborative effort with Mako Films in which AERA was featured in a film made for TV. The film pertains to a project on the "Arabia", a well-preserved 19th century shipwreck. John Stoneman's film, "The Arabia Incident" will have its world premiere at AERA's Aqua Space '78.

The festival will take place during the weekend of November 4th and 5th in the Math Building at the University of Windsor, Windsor, Ontario, Canada. There will be contests in underwater photography, movies and research projects with both amateur and professional categories. The entry deadline is October first. For more information, contact Jocelyn Goodwin, 3147 California Ave., Windsor, Ontario, Canada, N9E 3K5.

Rockford Divers Presents

Paul Tzimoulis will headline a weekend of entertainment on November 10th and 11th near Rockford, Illinois. The occasion is the Tzimoulis Film Symposium where you will get to meet Mr. Joe Strykowski, the author of several popular books on diving and photography.

Films to be presented include: THE SILENT WARRIOR by Al Giddings; SEA SORCERY by Jim Dutcher; DEEP BLUE WORLD by Dave Adams; FISH FEEDING by Paul Tzimoulis; SEE by Robin Lehman; I AM THE SEA by Ozzie Wissell and FIRE UNDER THE SEA by Dr. Lee Teplery.

For further information or tickets, please contact: Bill Steinborn, 1385 Randall Drive, Rockford, IL 61108.

IQ-10

IQ-10 caps a decade of commitment to excellence in the diving industry. It is the largest annual gathering of instructors, retailers and manufacturers in the world.

IQ-10 is aimed at all agency diving instructors, assistants, leaders, divemasters and serious divers. It's a gathering place for new ideas, techniques and topics.

Black and White Prints, Artistic Slide Shows and Educational Slide Show winners will collect big cash prizes at IQ-Ten. Anyone may enter the competition. Entry blanks and rules are available from NAUI/WDA Headquarters. Pre-registration is required.

Last year's sponsors gave away five trips, some with airfare, seven major pieces of equipment, plus t-shirts, books, and scholarships.

Special interest meetings are brewing for all day Thursday, November 9th. These all day workshops are for those persons who want an in-depth small group workshop on specialized subjects.

Thursday evening is a small "Meet the Speakers" reception sponsored by Skin

Diver Magazine. For attendees who arrive early, it's a great time for casual chat with the speakers.

Friday evening a huge social will explode in the Exhibit Hall. Over 1,000 people are expected for this annual event.

The weekend will be two and half full days of technical sessions, workshops, poster sessions, Dive the Americas, exhibits, pool demonstrations, debates, socials and a Jack McKenney mini-film festival.

Sunday is particularly aimed at sport divers. Divers Sunday at Disneyland is Sunday, November 12th. Unlimited ticket passes at greatly reduced rates will be available only through IQ. Diver's Day may be purchased with a regular IQ registration, or separately for Sunday Only, or at Sunday Only Group Rates for 12 or more persons.

For more information write or phone: IQ-TEN, P.O. Box 630, Colton, CA 92324, (714) 783-1862.

Cave Diving Workshop

The tenth Cave Diving Workshop will be held December 30 - 31 at the Women's Club in Branford, Florida.

The schedule of events includes lectures, slides, films, demonstrations and practice dives in both basic and advanced cave diving.

Branford is in the heart of Florida cave and spring diving country. There are many nice primitive and developed campsites available nearby and a number of good spring-cave diving sites are close at hand.

For more information contact Dr. John Zumrick, 2114 N.W. 55th Blvd., #12-A, Gainesville, FL 32601.

Law Enforcement Seminar

They came from California and Delaware, South Dakota and Georgia and half a dozen other states to take part in the first international law enforcement school held in Marquette, Michigan.

Twenty-three persons attended the week-long school that was staffed by some of the top diving instructors in the United States and Canada.

Participants received certificates of permanent registry with the Northern Michigan University Law Enforcement Institute. Divers completing the institute received the first P.A.D.I. Law Enforcement Diver certifications in conjunction with the new P.A.D.I. Specialty Certification Plan.

One of the major goals of the NMU school was to help establish international standards for law enforcement diving. Among the topics covered included general water safety, dealing with drowning victim's families, specific precautions in recovering victims of a plane crash and handling of explosives and radioactive materials, discipline and safety in dive site management.

Students were shown how to use photography as evidence in court and as a training aid. They were also given intense instruction in application of the latest search patterns.

For more information on the activities and instructors planned for next year's seminar contact:

Mr. Robert Hanson, Law Enforcement Training Ctr., Northern Michigan University, Marquette, MI 49855, (906) 227-2660.

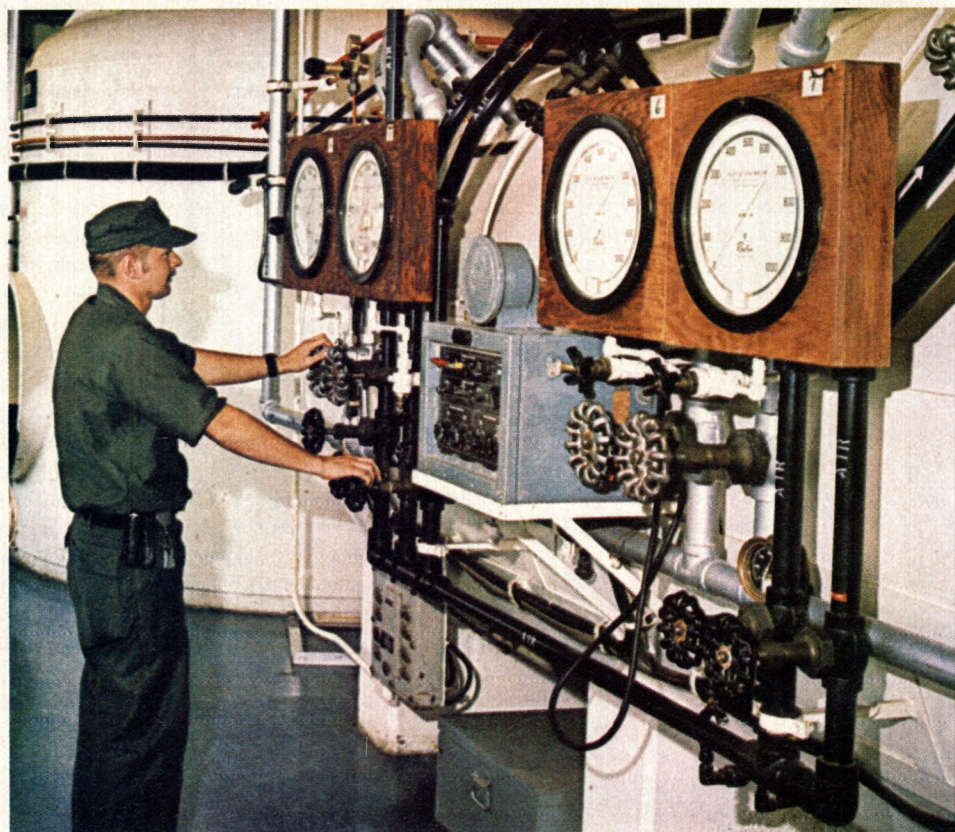
WORKING DIVER: THE INVINCIBLE MARK V

Story and Photos by John C. Fine

"A diver is invincible in that," Salvage Instructor Tom Roan said. He turned and pointed to a diver in the pot wearing a canvas suit and a Mark V diving helmet. Chief Warrant Officer Roan is an instructor at the U.S. Navy School of Diving and Salvage, or the "Naval School, Diving and Salvage" as it's termed in official records. The pot is one of the school's two hyperbaric tanks which can simulate depths to 550 feet for deep heliox diving. Dives in the pots are part of a rigorous curriculum designed to familiarize Navy divers with that mainstay of the fleet, the Mark V diving helmet.

In 17 weeks, the second class diver trainees that enter the school are put through training and exercises that would make the most hardened commercial diver grimace. If they pass, they emerge ready to handle any salvage situation the service can offer. Built on the edge of the Washington Navy Shipyard in Washington, D.C., the school graduates about 390 students per year. It holds courses for officers in Ship and Salvage Diving, Deep Sea Diving, Ship Salvage Operations for Engineers, Medical Department Diving Officers, Diving and Salvage Indoctrination for Ship Commanders and Recognition and Treatment of Diving Casualties. Three courses are offered for enlisted men, and the graduates are qualified as Master Divers, First Class Divers or Medical Deep Sea Diving Technicians.

"This is some of our project material," Roan said, pointing to a large iron culvert-like contraption. "The Mud Monster there we drop in the Anacostia River. The divers have to send up certain parts, one working inside the other on the outside. They have to



patch it and refloat it in a certain time to pass the project. By the time they're through, they're usually under three feet of mud."

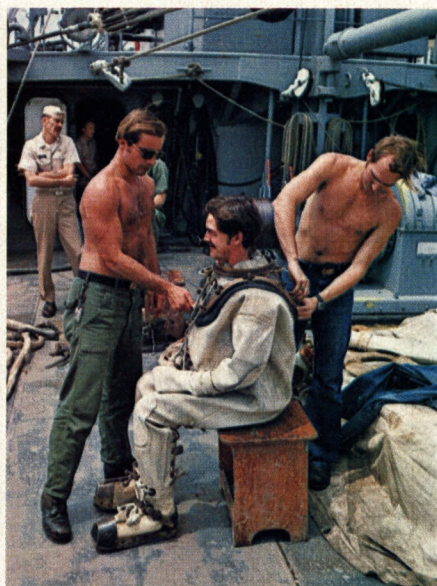
"We have trainees take a high pressure hose and practice tunneling in the river. There's about 8 feet of soft mud, then you hit the hard mud. They usually get down to about 30 feet before the mud starts falling back in on top of them. Of course, in the Mark V helmet, it doesn't matter as long as they have the high pressure nozzle so they can get out," Roan said casually.

Tunneling through 30 feet of mud isn't fare for the average diver, but for the commercial salvage or Navy diver, it's an ordinary sort of job. And jobs of this nature are usually performed in rivers like the Anacostia or the Hudson or in a fouled bay or harbor.

"The other stuff we do teaches the men the kind of things they'll have to work with in the field. We have a complete stock of hydraulic tools and chain saws," Roan said.

Besides the two pressure tanks which are directly connected to double lock recompression chambers, the school has two open tanks for orientation in hard hat gear and a submersible "turtle" or tank that can be lowered through a converted YRST-5 barge directly into the Anacostia River. The turtle provides a controlled atmosphere in which trainees can work on welding, patching and cutting pilings.

The school operates five other ships, two YDT vessels fully equipped for sustained diving operations, including helium-oxygen deep diving, a YSD and an LCM both equipped for diving and



For Navy divers training at the Naval School of Diving and Salvage, the port of a Mark V diving helmet is their "window on the world". That world includes tunneling under river bed muck and lots of zero-visibility water.

salvage, an LCVF equipped for scuba activities and a 35-foot WB for river logistic support.

Although the equipment used at the school is considered by Roan to be "just standard gear", the equipment is far more complex, advanced and plentiful than what was originally envisioned by Warrant Gunner G. D. Stillson, the father of the U.S. Navy Diving School. In 1912, Stillson challenged the Navy high command with the failings of obsolete apparatus and lack of professional training. Stillson's proddings led to steady improvement, but it was the F-4 disaster that finally brought government and public opinion to bear. On March 25, 1915, the U.S. Navy submarine F-4 was lost off Honolulu in 288 feet of water. Stillson and his crew of divers made dives to

306 feet on compressed air to salvage the vessel, but the F-4 was raised too late to save the crew. This tragedy provided impetus for the establishment of the first Navy diving school at Newport, Rhode Island.

The original school was disbanded when the divers were transferred to France during World War I to take part in salvage operations. Finally, in 1924, the first Navy diving manual was published, taking the divers at the school, now located in Washington, out of the era of trial and error and into an era of intensive scientific research.

Subsequent submarine disasters like the sinkings of the S-51, the *Squalus* and the S-4, which went down in 102 feet of water off Provincetown, emphasized the need for improved rescue techniques. Today, the school

operates a submarine rescue chamber, standard fleet equipment for bringing up the crewmembers of sunken subs.

"A diving officer or diver rides the chamber down to make a hook up with the submarine," Lieutenant Lee Wolford said over a cup of coffee. I asked the maximum depth at which the chamber could effectively be used. Wolford responded, "The actual depth gets into classified information, but you can say from depths in excess of 400 feet."

After viewing several pieces of advanced gear, I was mystified by a large piece of rope labeled "Buddy Line" hanging over the scuba gear storage room. It was a ten-foot looped line about as thick as hemp comes, the kind liners use to tie up at a wharf. Tom Roan laughed when I asked about it, "That's our buddy line. If a guy leaves his buddy, he has to pack that around the rest of the day. It's a super training aid. Once they carry the buddy line, they never forget again."

"Just what I need for my scuba classes," I mused.

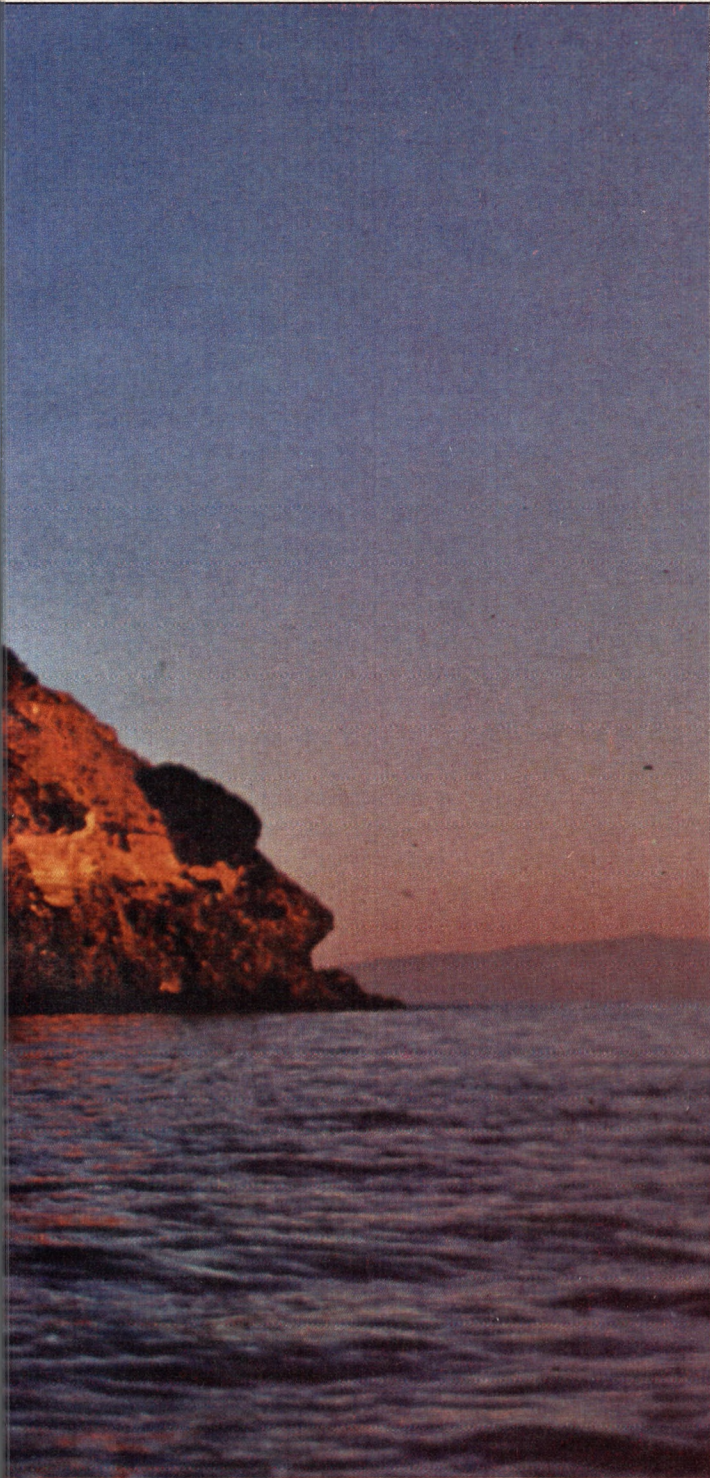
From basic scuba to hot-water suits, deep diving habitats to rubber-suit Kirby-Morgan, full-face mask rigs for mixed gas diving, Navy divers are trained here to work and dive in almost any imaginable situation. Even though the new technology of diving makes operations possible that were not even attempted 15 years ago, Chief Warrant Officer Roan said, "You can't completely replace the Mark V."

To underscore the point, as I was leaving, I passed Jake, the school mannequin. He was dressed in a standard U.S. Navy canvas suit and the hard hat helmet that has become the symbol and official insignia of Navy divers: the invincible Mark V.



A Scholarship Adventure

By Ron Coley



Ron Coley

A final blast of air from my low pressure inflator adjusted my buoyancy so that I hung suspended five feet from the bottom. Checking my light meter one last time, I gave the signal for the action to begin. The whine of my 16mm movie camera was soon covered up by the electrical hum from the motors of the bright yellow K-250 submarine that was emerging from the darkness of a small rock canyon framed by giant strands of kelp. As the sub approached, a diver descended from the kelp canopy above to rendezvous with the sub immediately in front of my lens. I stopped filming, lowered the camera and gave the signal for everyone to return to their original position and get ready for another take.

We did, in fact, shoot another one, and then another one from a different angle. Then, I moved in and filmed the close-ups and cut-aways I needed for the scene. Out of film, I called for a cut in the action. Everyone surfaced.

The sub was piloted by Ernest H. Brooks, II, President of Brooks Institute of Photography, and the pretty young blond diver descending into the scene was a marine biologist and 1976 Our World

The R.V. Just Love (left) is the floating campus for students of the Brooks Institute of Photography.



Ron Coley

Underwater Scholarship winner, Robin MacFadden. I realize that this must sound like daydreams, but these were not hallucinations or illusions of grandeur. When I surfaced, it was a bright, sunny day off Santa Cruz Island, and I really was climbing aboard the 60-foot research vessel, *Just Love*.

In the fall of 1976, I was in Southern California for three months of intensive studies at UCLA, Scripps Institute, and the USC Marine Science Station on Catalina Island. My travels and studies came as a result of my being one of the finalists for the Our World Underwater Scholarship that year.

The Scholarship is given annually by a non-profit organization of sport divers from Chicago, Illinois. The funds for the scholarship are raised each year at the Our World Underwater film festival and diving symposium. Unlike most scholarship programs, there are no structured classes. This study program is composed of one year's worth of experiences working in the field with the leading authorities in all of the various ocean-related disciplines. The host and hosting institutions volunteer the different experiences to the scholarship committee. Travel for the scholarship is world-wide; past recipients have participated in expeditions to the North Pole, the Caribbean, and the Aleutian Islands. For anyone interested in an ocean career, the experience of working with and making friends of leading professionals makes this the most unique and exciting educational opportunity available.

The grand finale of my personal scholarship travels was Project Week at Brooks Institute of Photography. For years I have dreamed of attending Brooks, a fully accredited university that specializes in the photographic arts and sciences. Brooks is the only college I know of offering a major in underwater photography.

Dreams gave way to reality as Robin and I joined five advanced students of the Brooks Under Sea Program on a ten-day photographic expedition to the beautiful Channel Islands. During this time, each student was to complete an individual project. Some of the projects were: the testing and evaluation of the new Hasselblad underwater housing for the super-wide, a photo story for a yachting magazine, a photo story for a travel magazine, and a 16mm motion picture —mine.

As soon as we set sail, Ernest H. Brooks, II, University President, became "Ernie", friend, shipmate and diving buddy. Ernie has participated in oceanographic expeditions all over the planet. He worked on all three SEALAB projects with the Navy and was one of the first Americans to dive beneath the North Pole. His technical expertise is rounded out by his patience and understanding, making him one of the easiest people to learn from that I have ever met.

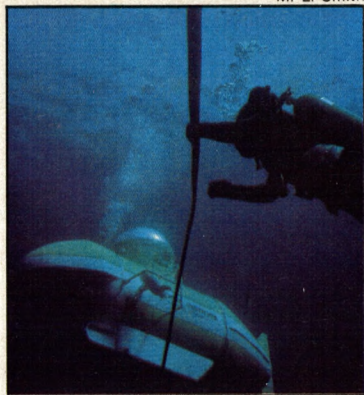
With Ernie's help, I arranged the shooting schedule for my film around everyone else's activities, thus making the entire crew of the *R. V. Just Love* part of the cast of my movie.

Now a research vessel owned and operated by Brooks Institute, the *Just Love* was originally a fishing trawler. A proud and sturdy lady with a long history of safe and profitable cruises, she has been converted into a complete working platform for all types of photographic assignments at sea, above or below water. Some of the many unique features of this extraordinary ship are: *Snoopy*, a K-250 one-man dry sub set-up with stereo photographic cameras for survey and archaeological work as well as deep water reconnaissance, an on-board color darkroom, color-corrected deck lights for working and filming at night, a set of surface-powered 1000 watt underwater movie lights, and a compressor/cascade system for filling tanks. Add all of this to a bushel basket full of electronic gear such as radar, loran, side scan sonar, fathometers, and recording depth finders and you have a boat that any underwater film maker would drool over.

Getting ready to go out on Project Week, I knew that I had the perfect environment to work in. I had an enthusiastic and knowledgeable crew to work with and I even had an experienced and attractive model!

I wanted to tell a simple story. By using Robin as the central figure in my film, I hoped to capture the action and emotion that makes Project Week what it is at Brooks.

Oddly enough, it was Robin being such a good and safety conscious diver that led to my first production problem. I wanted her to dive without a hood so that her long blond hair would flow freely in the water. She said that her hair would get tangled in the tank valve and first stage, this would



*The K-250 sub is just part of the esoteric equipment aboard the **Just Love**. Ernest Brooks, (inset, bottom) President of Brooks Institute of Photography is personally involved in the studies of each of his students.*

not only be uncomfortable, but could also be potentially dangerous.

Ernie's lovely wife, Diane, came to the rescue. Out came a plastic sandwich bag. When it was attached with rubber bands, it made a tangle-free tank valve and first stage assembly. I got my "free-flowing" blond hair and solved my problem.

Robin turned out to be tremendous to work with. She is a trained marine biologist and had just received her undergraduate degree from Occidental College in Los Angeles. Her four years of experience working in the coastal waters of California was a big asset in my work.

Diving in California turned out to be an unexpected high. Full wet suits and stories of great days when the visibility was almost 50 feet did not do much to boost my enthusiasm for getting wet. I hate to get cold and was accustomed to making regular religious pilgrimages to the Caribbean.

If ignorance is bliss, knowledge must be ecstasy. Diving California is a unique and exciting experience not to be passed over in favor of the exotic tropics. The main factor limiting visibility here is all of the plankton in the water. The end result of all that plankton is an incredible abundance of marine life. Whales and sea lions, sharks and rays —marine life of all shapes and sizes frolicked about incomprehensible cathedrals of giant kelp. Diving here is a celebration of life. Needless to say, after the first dive, I had no problem getting up for an excursion in this cold, dirty water.

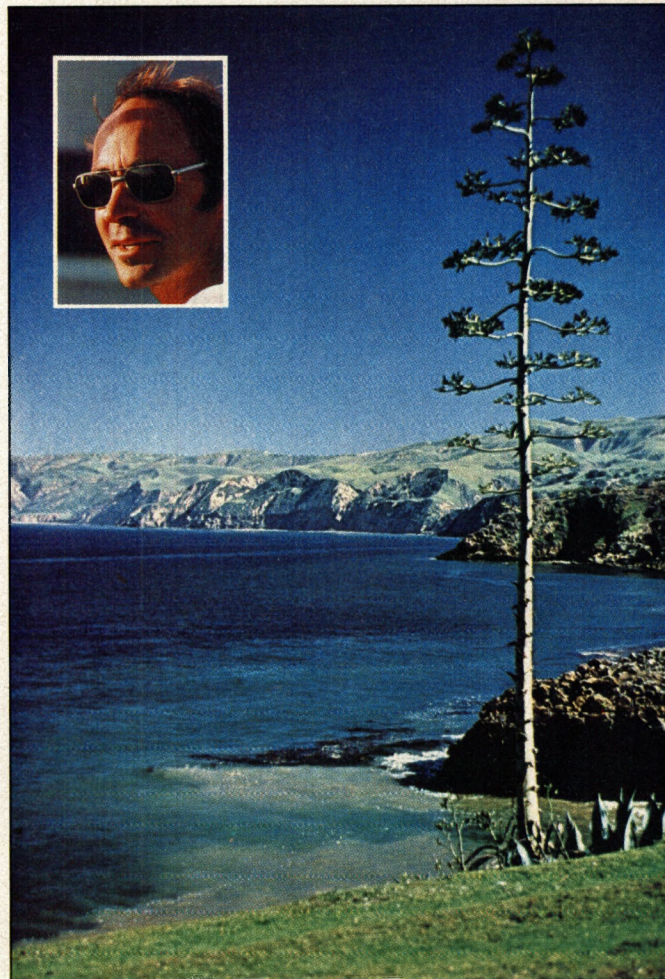
We dove in teams and took turns working as photographer, model, light man or assistant. The teams were constantly rotated, giving me the opportunity to work with some of the finest young photographic talent in the underwater world. It was a very casual, relaxed, almost family-like atmosphere that allowed us to take care of all the equipment cleaning, the filling of tanks, the pre-dive planning session and the post-dive evaluation and still make at least three dives a day for the entire cruise. On several occasions, we managed to slip in an additional midnight dive as well.

Filming went well all week and the sequences that my script called for seemed to fall into place without any hangups. That is, all except one! I had

continued page 78



Ron Coley



ALL NEW DACOR PACERTM*

*Positive Air Controlled Equalizing RegulatorTM

PATENTS PENDING

Highly sensitive neoprene diaphragm with bonded stainless steel plate for added wear at contact point with demand lever activator.

All brass parts are copper, nickel and chrome plated for maximum corrosion resistance.

Dual Exhaust System for easier exhalation and purging. (See facing page (C))

Optional extreme condition kit available.

Anti-Free Flow Device with special water chamber. (See facing page (D))

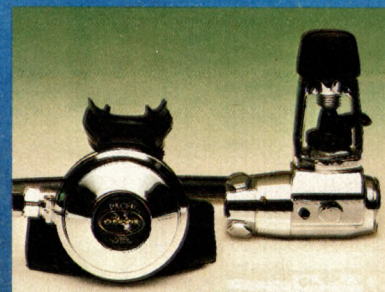
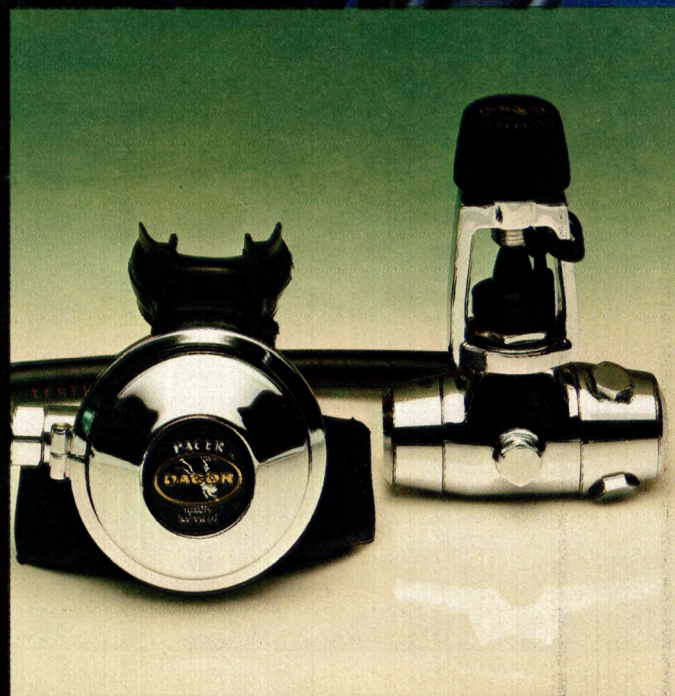
Orthodontic designed contoured mouthpiece provides maximum comfort with minimum fatigue.

Stainless steel demand lever activator provides a 24 to 1 lever ratio for smooth, effortless delivery.

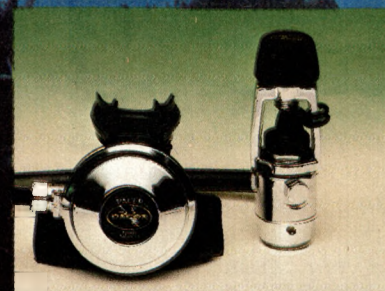
Free turning hose swivel permits easy rotation.

Venturamatic Flow VaneTM and Venturamatic Booster ClipTM disperse and deflect flow to "air" balance second stage. (See facing page (A), (B))

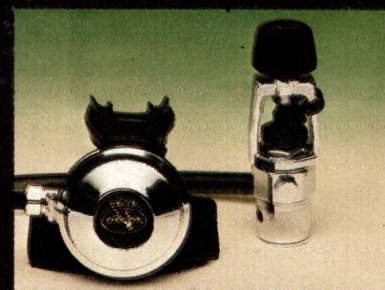
PACER Model 900



PACER Model 600



PACER Model 300



PACER Model 150

A
WHOLE NEW
GENERATION
OF REGULATORS
THAT INCREASE
YOUR COMFORT,
CONFIDENCE,
AND
DIVE TIME.

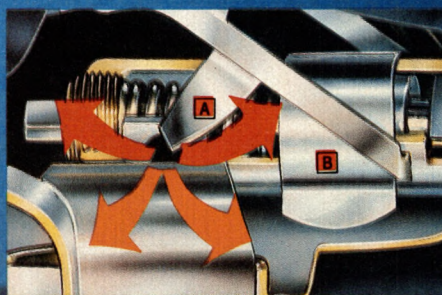
MAKES BREATHING BELOW AS EASY AS BREATHING ABOVE

FIRST AND SECOND STAGES ARE BOTH TOTALLY BALANCED FOR TOTAL PERFORMANCE

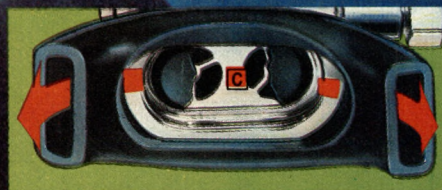
A DACOR FIRST—AUTOMATICALLY BALANCED SECOND STAGE FOR UNMATCHED BREATHABILITY

Dacor is proud to present a complete new line of PACER® regulators. These **Positive Air Controlled Equalizing Regulators* are not just an improvement but the most important innovation in regulator "breathability" in the 25 years we have been manufacturing diving equipment. Dacor has harnessed a principle of physics known as "Venturi" and invented a revolutionary *Venturamatic System* that completely "air balances" the PACER second stage. At the same time Dacor's *Venturamatic System* controls run-away

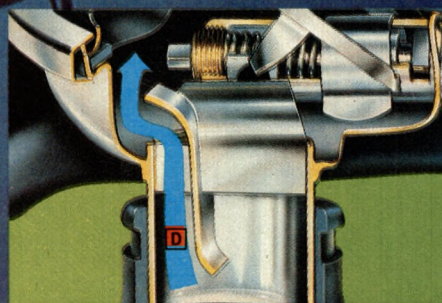
"Venturi" flow, surging, and free-flow—which, until now, have been a problem with all high volume regulators. The PACER's smooth laminar flow allows the diver to get the air he needs when he needs it and, at the same time, provides the same smooth, natural respiration as surface breathing at any depth and under the most extreme demand conditions. Dacor's exclusive *Dual Exhaust* feature ideally matches the PACER's large volume inhalation with the 50% easier exhalation effort.



Exclusive Venturamatic™ System
(PATENTS PENDING) Here's how it works—As air flow increases with lowering of valve lever, the *Venturamatic Flow Vane (A)*, which is an integral part of the lever itself, also lowers and disperses the air stream in amount and direction related to volume of flow to prevent surging and uncontrolled venturi. The *Venturamatic Booster Clip (B)* effectively directs air flow to create and control venturi, making valve opening easier under high volume demand.



Exclusive Dual Exhaust System
Here's how it works—Two large exhaust valves (C) eliminate exhalation resistance and make the PACER 50% easier in exhalation effort and purging.



Exclusive Anti-Free Flow Device
Here's how it works—When PACER is removed from the mouth underwater, water enters special chamber (D) thus balancing ambient water pressure on internal side of the diaphragm and stopping air flow. This function is automatic and takes a maximum of 3 seconds.



DACOR CORPORATION
161 Northfield Road
Northfield, Illinois 60093
P.O. Box 157

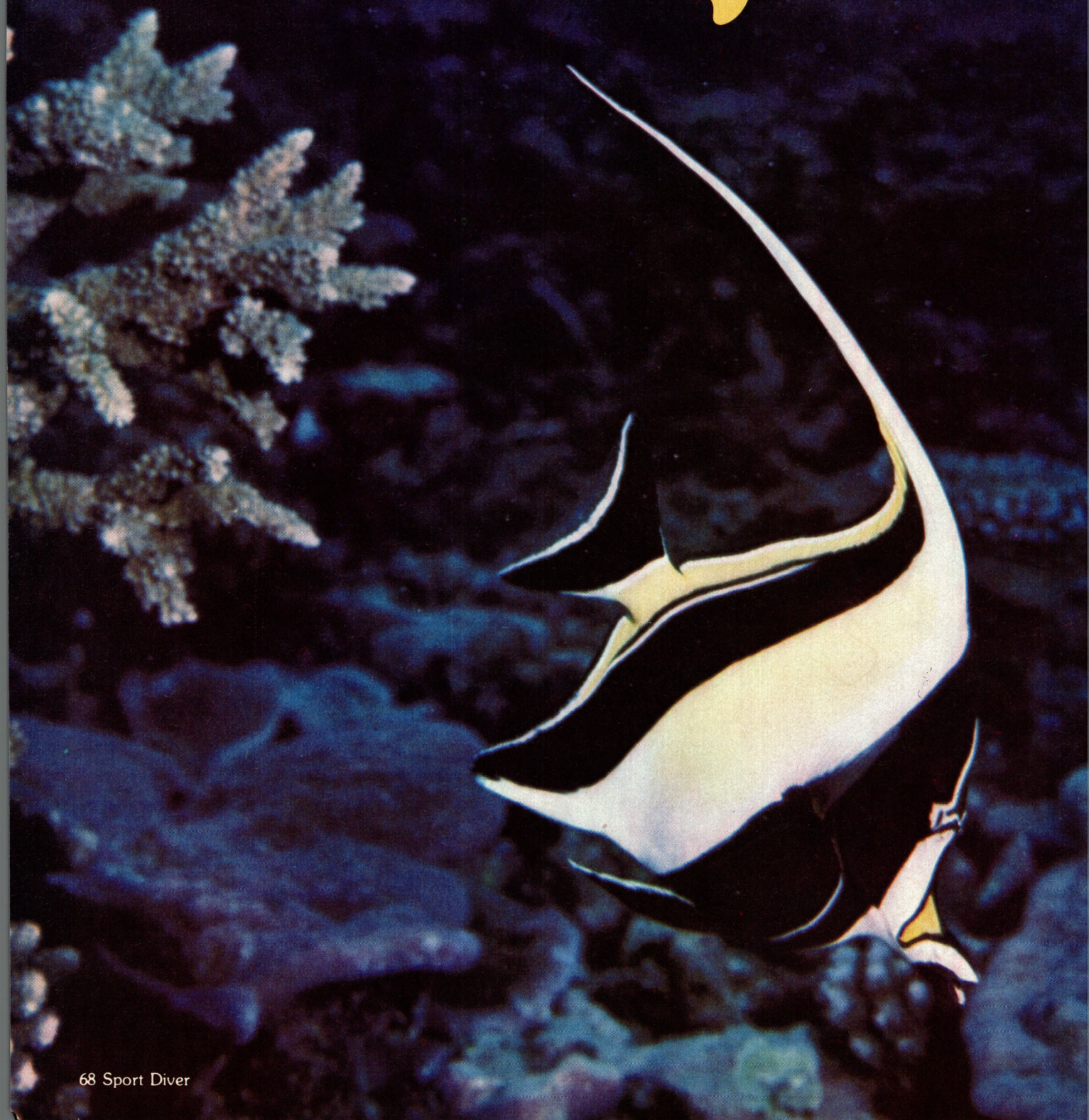
Send \$2.00 for Dacor Diver's Kit. Includes catalog, cloth patch, decomp. table, decals.

dacor
INNOVATION IN
EVERY FEATURE
OF PACER'S
COMPLETELY NEW
FIRST STAGES

PACER FIRST STAGE FEATURE CHART

PACER MODEL NUMBER	900	600	300	150
Balanced diaphragm design	•		•	
Balanced flow-thru piston design		•		
Piston with teflon seat and back up rings for maximum sealing				•
Balanced first stage for minimum breathing effort and maximum air flow, regardless of tank pressure	•	•	•	
Dual spring design provides equal pressure on high pressure diaphragm for smoother first stage opening	•		•	
Swivel attachment yoke for proper alignment of low and high pressure hoses	•	•	•	•
3 low pressure ports on swivel for comfortable alignment of hoses for vest, dry suit or octopus	•	•		
2 high pressure ports, one on each side of first stage allows use of underwater pressure gauge on either side	•	•		
Heavy forged naval brass body, triple chrome plated	•	•		
Heavy brass triple chrome plated body, yoke and yoke screw			•	•
Optional European din yoke for overseas use	•	•		
Optional silicone hydraulic protection system	•		•	

TAHITI





the legendary islands

Story and Photography by Carl Roessler



Merely mention the words "South Pacific Islands" and in many minds the same name will appear — Tahiti. The very word drips with a special lure, of palm trees, of long-haired girls in grass skirts, of the world's most beautiful islands.

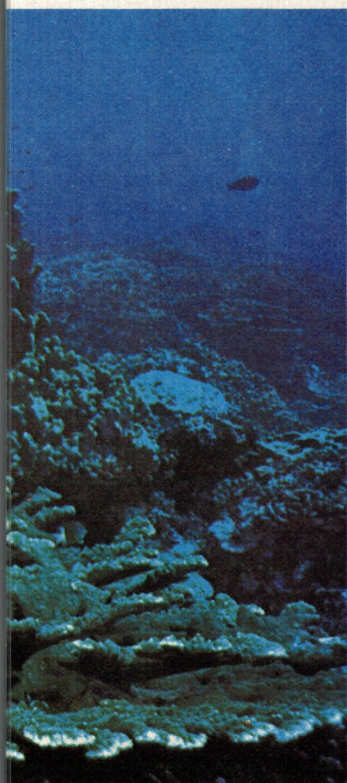
Since their discovery in 1767 the islands of French Polynesia have been synonymous with the special blend of languor, beauty and mystery that tempts men to leave an industrial society. Paul Gauguin, perhaps the 19th century's most celebrated dropout, created his famous paintings and lived out his tormented life here. England's formidable Captain James Cook was a young lieutenant when he first observed the transit of Venus from a fort on Tahiti. Here Fletcher

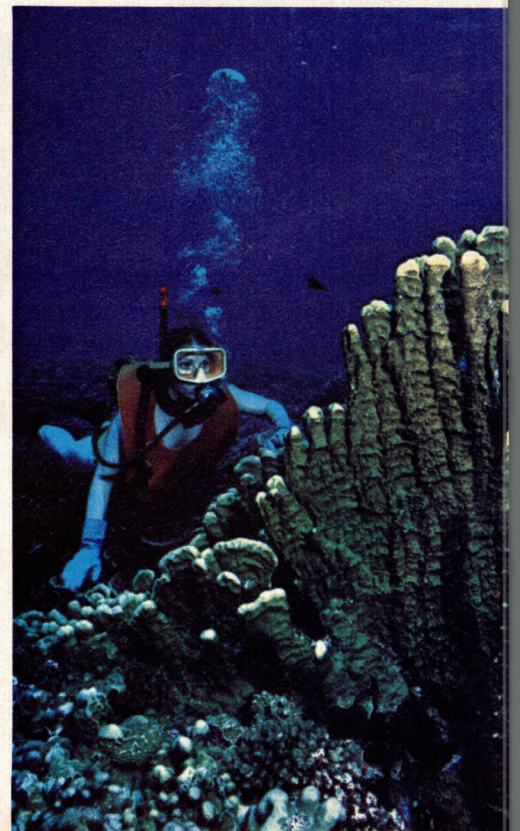
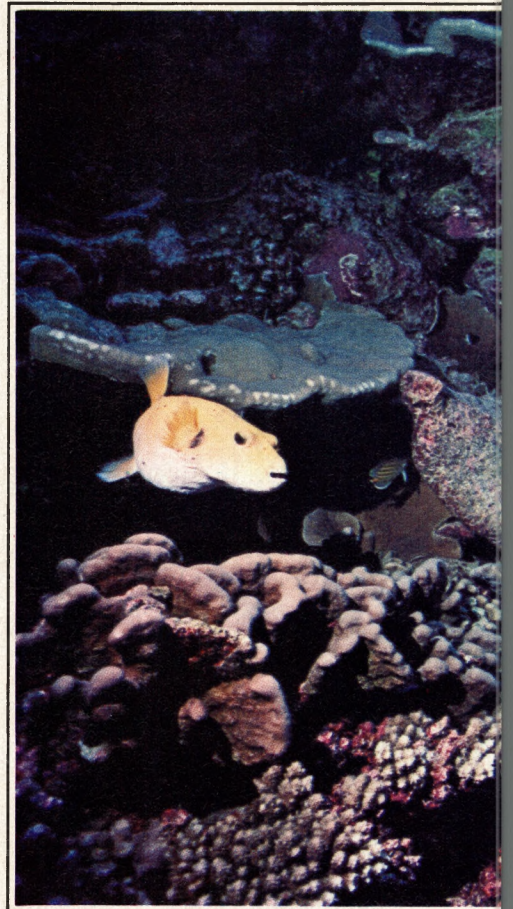


Christian and his mutineers put Captain William Bligh to sea in a small boat, a drama immortalized by Nordhoff and Hall in *Mutiny on the Bounty*.

Actually, these islands are quite varied. Among the so-called Society Islands (Captain Cook's appellation, because they were close together) volcanic peaks thrust into the blue sky from placid aquamarine lagoons. On the other hand, the islands of the Tuamotu group are but low atolls whose central peaks disappeared

The banded butterflyfish (right) is typical of the area's fish life. A shy hawkfish (opposite page, left) cowers under coral branches as Jessica Roessler glides in for a look. The lagoon at Huahine (opposite, top) is a favored spot for sailboats that cruise the islands.





beneath the sea ages ago.

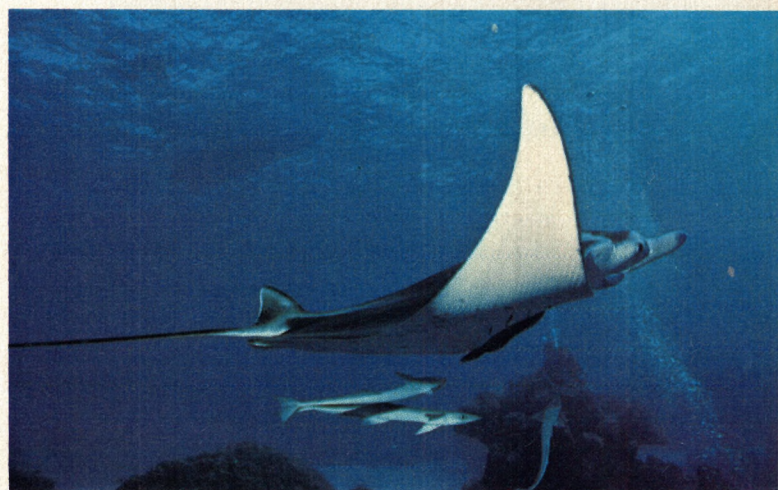
The large island of Tahiti and its nearby neighbor, Moorea, are the main focus of modern tourist activity. The larger hotels and dive services are concentrated here because of their proximity to the main international airport at Papeete. Both of these islands are still very beautiful, though the



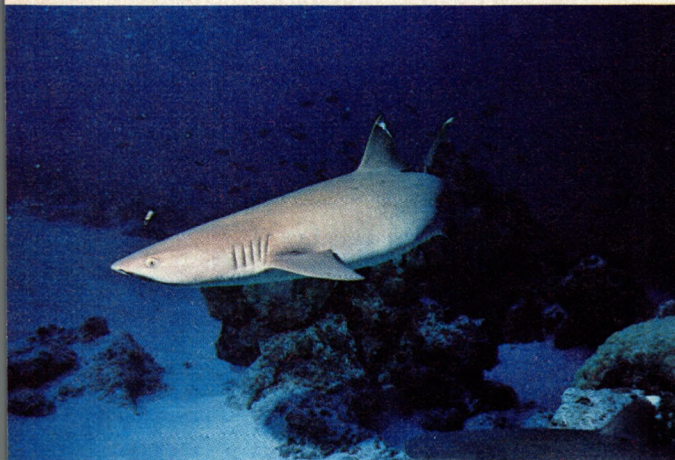
inevitable blemishes of tourism are evident — many people, large hotels and shops, and plenty of traffic.

Today the charm of Polynesia is best sought in the outer islands. Huahine, Raiatea, Tahaa, Bora-Bora, Rangiroa and Manihi boast smaller hotels and a large measure of that fatal charm that mesmerized 19th century adventurers.

Unfortunately for divers, facilities in these outer islands are both limited and very expensive. Huahine, Raiatea and Tahaa, for example, have no compressors at all, while at last report Rangiroa had only eight scuba tanks. This lack of aggressive preparation for divers is partially due to the fact that our American go-go quality runs directly counter to the cherished French Polynesian languor. Indeed, if the local entrepreneurs had geared up for diving tourism Bahamas-style, both the beauty and the atmosphere of these incomparable outposts would have been impaired. To enjoy Bali-Hai, we must give up our cherished torrid pace.

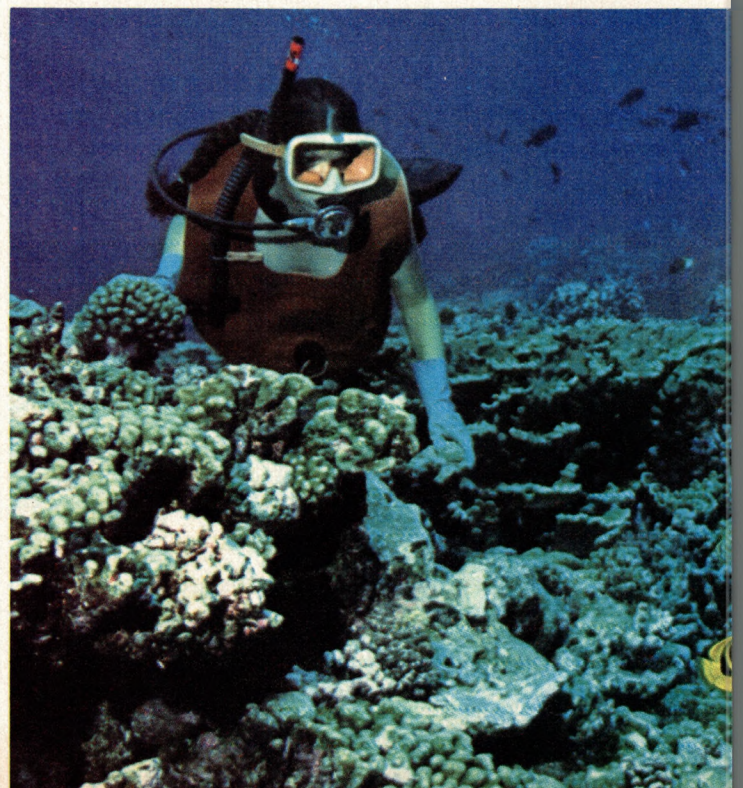


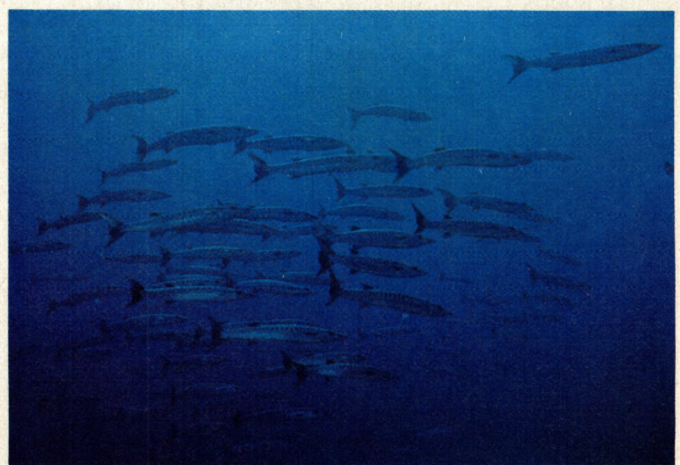
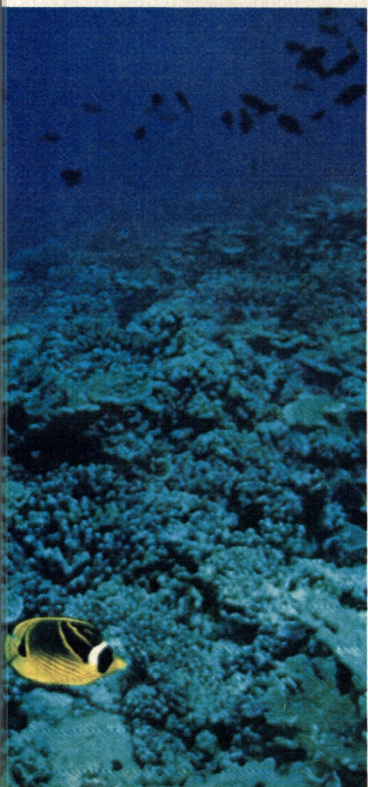
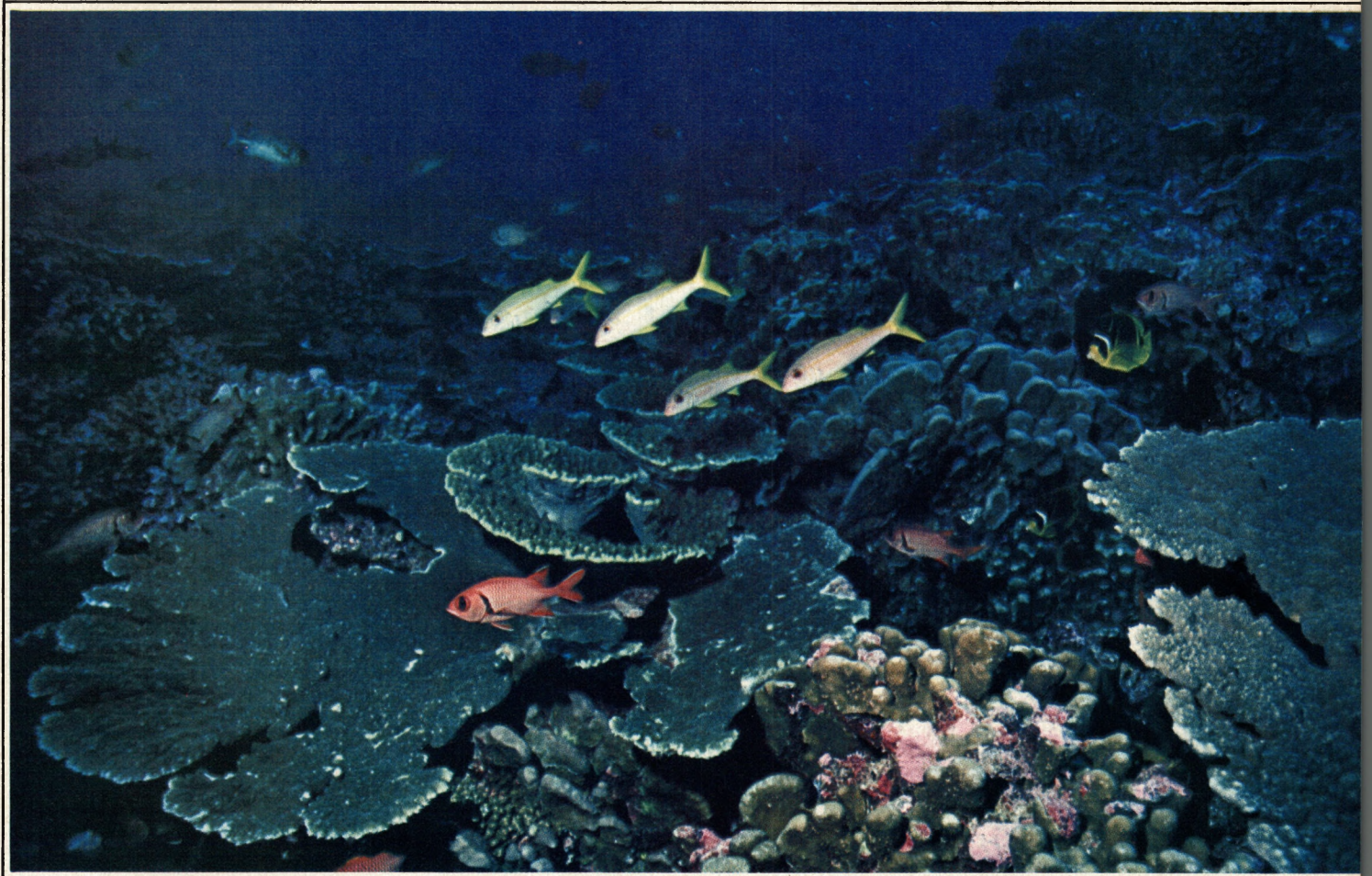
As with most of the reef inhabitants, the moray (far left) and Manta ray (above) were not disturbed by the presence of divers.



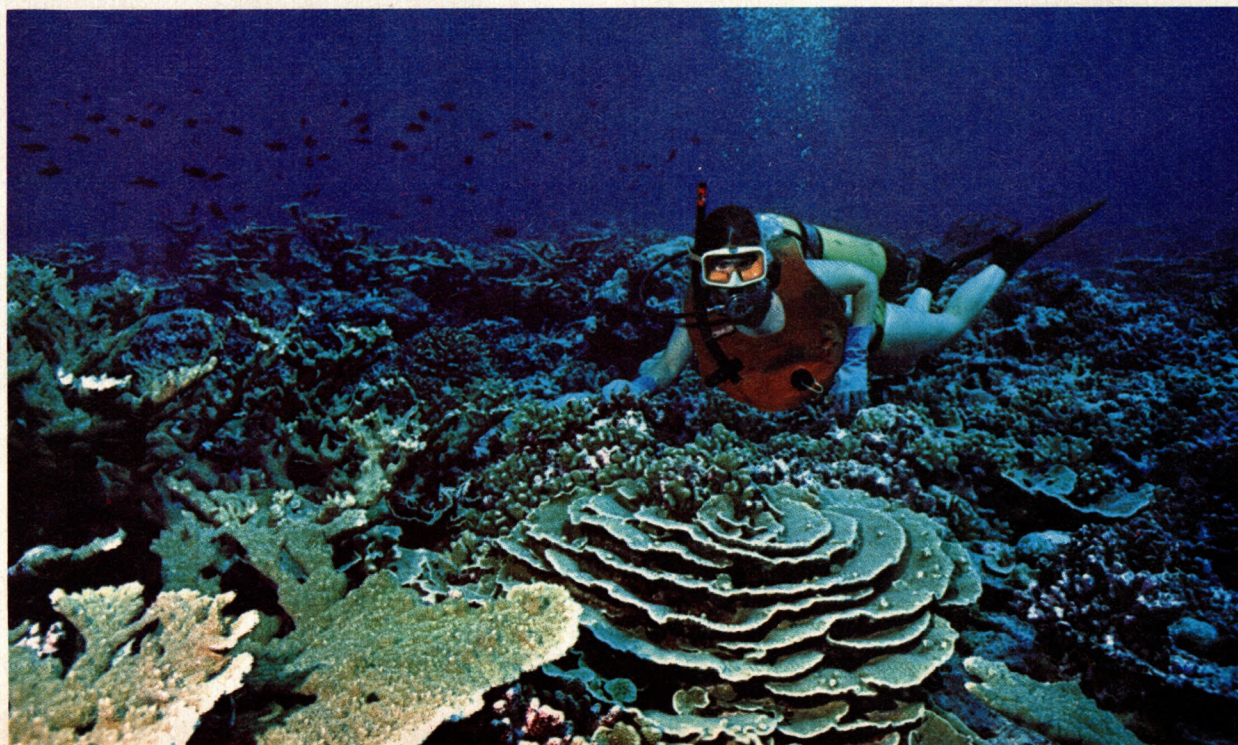
There are several approaches to diving the Tahitian islands. One is to use the larger facilities of Club Med in Moorea or the major hotels of Papeete. Another is to go in very small groups so as to fit within the limited facilities of the outer islands. Yet another is to make special arrangements for boats and equipment charters through See & Sea Travel of San Francisco, who have long offered a varied Tahiti outer islands program.

Marine life on the Polynesian reefs is rich, but some areas are far richer than others. Most of the reefs of the Society Islands are low-growing and noted more for their colorful fish than their coral development. Swarms of small tropicals dart among the rather low-lying coral heads, luring the still photographer. In the Tuamotus, the corals

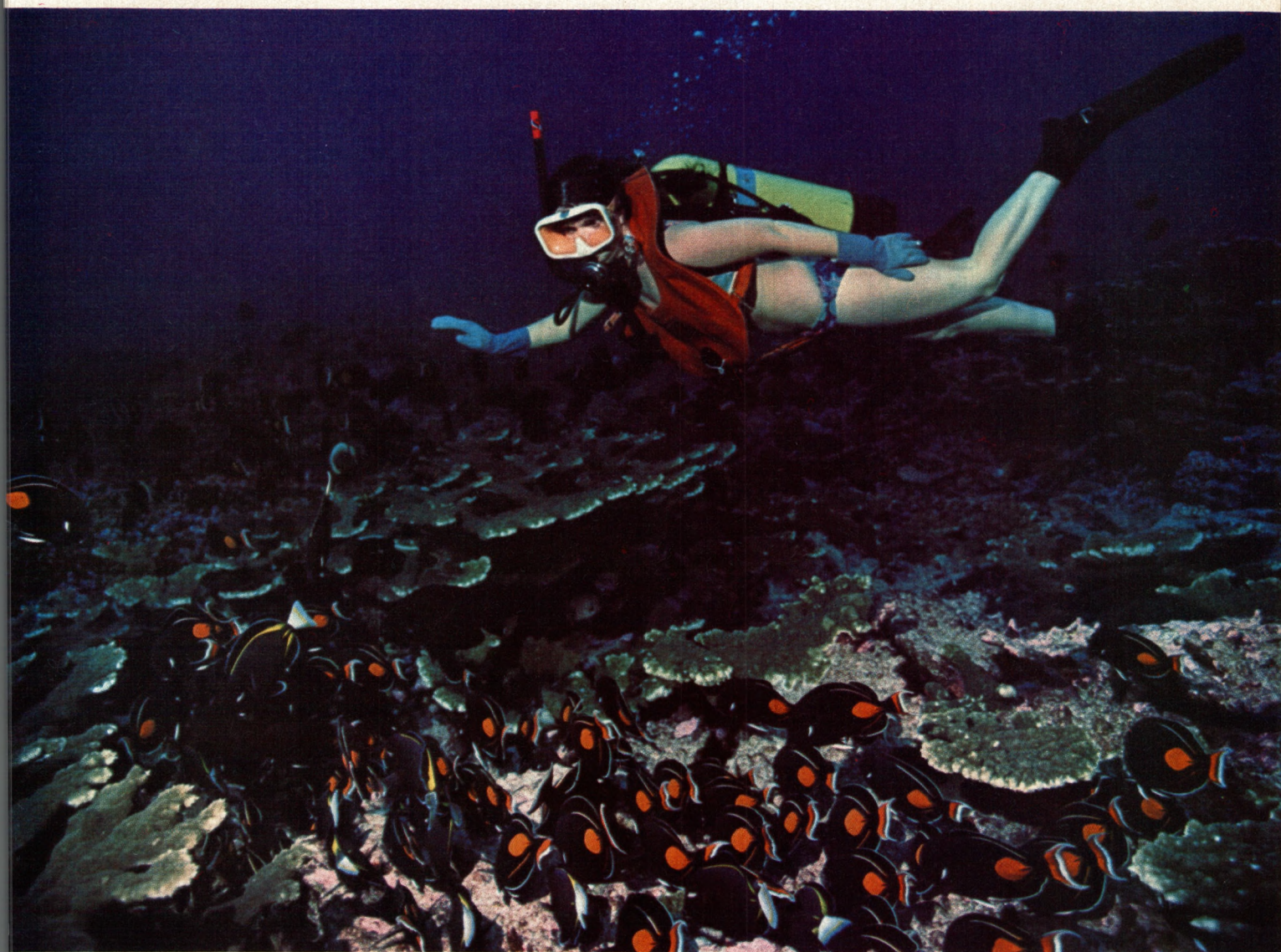




White tip sharks (far left) are not unknown around Tahiti. This one came in for a close look, then swam out of sight over the reef.



Sport Diver



are larger and the reefs more dramatic. In addition, there are more pelagic creatures such as rays, turtles, sharks and barracuda above these reefs. They are attracted to the rich food flow generated by swift tidal currents running in and out of the large lagoons each day.

The Tahitian islands are still among the most beautiful in the world; their underwater wonders lure us today as surely as their tropical mystery drew Gauguin a hundred years ago. As facilities in the outer islands develop, a new generation of temporary expatriates will invade replete with dive gear, and these very private reefs will echo to the quiet thunder of bubbles. Gauguin, we are here. 🐚

Plate corals (top) are quite common in Polynesia. Interspersed with pillar coral, they form the backbone of the area's reefs.

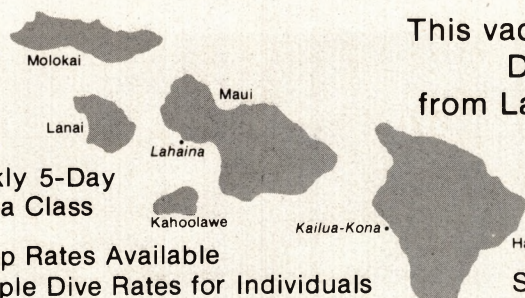
For more information write to:

Tahiti Tourist Board
700 S. Flowers Street
Suite 1704
Los Angeles, CA 10017

See & Sea Travel
680 Beach St., Suite 340
San Francisco, CA 94109

SUPERB HAWAIIAN DIVING with CENTRAL PACIFIC DIVERS

This vacation, enjoy
DAILY TRIPS
from Lahaina, Maui
and
Kailua-Kona



Weekly 5-Day
Scuba Class

Group Rates Available
Multiple Dive Rates for Individuals

Submarine Dive

WRITE FOR DETAILS

CENTRAL PACIFIC DIVERS

780 Front Street • Lahaina, Maui, Hawaii 96761
74-5484 Kaiwi Street • Kailua-Kona, Hawaii 96740

In the next issue:
GOOMBAY GUIDE
the most comprehensive
Bahamas travel and resort guide yet.

TOMORROWS CAREER TODAY!



THE SEA

ARE YOU READY? The world of inner-space remains as man's ultimate challenge. Your career as a commercial deep sea diver qualifies you to enter this fascinating and highly rewarding manpower need profession. DIT was founded and is staffed by men who know how to train you to work efficiently in and around the sea. DIT's nine year record of training excellence allows employers to hire its graduates with confidence. Send \$.2.00 for brochure containing course outline, employment statistics, financial assistance, etc.

NOW OFFERING a new six month course designed to meet the expanding growth in commercial diving.

Accredited Member, National Association of Trade and Technical Schools. Eligible Institution under the Federally insured Student Loan and Basic Educational Opportunity Grant Programs.

DIVERS INSTITUTE OF TECHNOLOGY

P.O. BOX 70312, DEPT. SPORT SEATTLE, WA. 98107 (206) 783-5543

APPROVED BY WASHINGTON STATE COMMISSION FOR VOCATIONAL EDUCATION FOR VETERAN TRAINING.

A Scholarship Adventure

continued from page 65


planned to shoot an elaborate scene where Robin swam and played with the California sea lions off Santa Barbara Island. We had already been out for six days up to this point, the sea lions had not seen fit to cooperate.

Ernie must have sensed my apprehension because, on the morning of the seventh day, he instructed my diving team to load all of our gear into the two inflatable boats carried on board. He then suited up and personally led our group to the point on the southern end of the island. There is a large sea lion rookery there but the area is unprotected from the open sea. Normally, large swells constantly pound into the rocky coast making diving here very difficult and dangerous. Good fortune was with us though, and on this particular day the sea was unusually calm.

What followed then was simply amazing. We had no sooner anchored the boats and rolled over the side when the young sea lions came out to greet us. They came three and four at a time, very curious and very playful. They darted in and out of our group in a rapid succession. Like and old time wagon train, our team of divers formed a circle on the sea floor while the sea lions very willingly played indians. They nipped at our fins, played tag with our bubbles and performed delightful aquatic acrobatics.

Ernie then left the circle and began turning, twisting and doing loops. In an instant, the sea lions caught onto his game and lined up for their turn to follow the leader. I filmed away.

The adventure was winding down, but just then I began to understand the thrill that motivates really excellent underwater photographers. As the pieces of each individual's project came together, the film took shape, growing sequence by sequence. With Ernie's guidance and project took new and expanded directions, exploring the commitment of students aboard the *Just Love*.

The rest of Project Week flew by in the wink of an eye. By this time, we were all old friends and for 240 hours we had worked like the devil, ate like kings and played the way only a group of people sharing an extraordinary adventure together can play. Each member of the crew had successfully completed his or her project, gained an experience that would last a lifetime, and shared ten days of *Just Love*. 

IN THE NEWS

Fish Trap Regulations Sought

The Marine Wilderness Society announced that it will seek passage of new legislation regulating the use of commercial wire fish traps, during the next session of the Florida Legislature.

"The rapid increase in the use of fish traps in Florida calls for the development of regulatory guidelines now, before their impact gets out of hand," commented Alexander Stone, public information officer for the Marine Wilderness Society. The number of fish traps in use could mushroom from a present 10,000 to a possible 150,000 traps or more in the next five to ten years.

Fish traps are hand-made from chicken wire of various gauges, measuring up to 8 feet by 4 feet by 2 feet. Bottom fish are lured into the trap's cone-shaped opening, but are unable to find their way back out. More and more of Florida's commercial fishermen are looking at fish traps as the answer to sagging catches of fin fish, crabs and lobsters.

This is precisely what is alarming conservation groups. Key Largo dive shop operators report serious breakup of branching corals on Pennekamp Park's reefs, due to fish trapping. Divers in the Middle Keys are conveying endless stories of tropical fish caught in lost, buoyless-traps and starving to death unable to escape. Sport fishermen claim that the traps capture both the adults and the juveniles in a fish school, so that the replenishment capacity of bottom sportfish may be seriously threatened in the not-too-distant future.

The Marine Wilderness Society will attempt to address

all these issues in their proposed legislation. The Society's planned bill will include sections regulating wire mesh size to allow juvenile fish to escape the traps, requirements for a chemically-degradable trap door hinges to prevent lost traps from becoming death cells, limits on the size and number of fish traps and provide that certain areas be off-limits to fish traps to prevent the destruction of critical coral formations. By the time the November elections are over, Stone feels they will be totally ready to begin the process of obtaining legislative support for the proposed bill. For more information, write The Marine Wilderness Society, P.O. Box 943, Miami, Florida 33165.

Amoco-Cadiz Oil Spill

The whole world is agast at the extent and implications of the Amoco-Cadiz 220,000-ton oil spill off the despoiled Brittany Coast. So much so, that the World Wildlife Fund-U.S. made a 7,500 dollar grant to the Society for the Study and Protection of Nature (SEPNB) in Brittany. The grant was raised from U.S. citizens living abroad through advertisements placed in the *International Herald Tribune* urging Americans to "help clean up this mess".

SEPNB is a French conservation organization composed of 5,000 naturalists. In the wake of the Amoco-Cadiz disaster, the group took a leading role in collecting oiled birds for scientific analysis and rehabilitation. SEPNB will use the World Wildlife Fund-U.S. grant to restore existing sea bird sanctuaries and protect other important nesting areas.

Brittany's population of sea birds was already badly reduced after the Torrey canyon oil spill in 1967. The Amoco-Cadiz spill, however, is considered the worst in maritime history.

The more than 3,200 birds found dead are believed to be only 10-15% of the actual kill. Shag, guillemot, razorbill and puffin were among the more than 30 bird species affected. The latter three are considered rare or threatened in France.

Many bird sanctuaries off the Brittany Coast were polluted including "Les Sept Isles" (Seven Islands), the most important nesting area for marine birds within the spill.

Two of the islands support one of Europe's major puffin nesting colonies. When the sanctuary was established in 1913, there were 15,000-20,000 puffins. After the Torrey Canyon oil spill the puffin population dropped from 2,000 nesting pairs to fewer than 800 pairs.

The full impact of the Amoco-Cadiz oil spill on bird populations and other marine resources will probably not be known for several years.

Looe Key Marine Sanctuary

The National Oceanic and Atmospheric Administration has delayed for a year considering a proposal to establish Looe Key as a national marine sanctuary. The sanctuary status would protect at least part of the only living reef in the United States.

A group of environmental organizations led by the Marine Wilderness Society is opposing the delay in consideration. Opposition to the sanctuary designation comes from commercial

fishermen who are afraid regulations would limit operations around Looe Key, located seven miles east of Big Pine Key. The fishermen are allied with the South Atlantic Fishery Management Council, a federally-sponsored agency which deals with policy matters related to fish management.

According to Ernie Premetz, executive director of the fishery council, it would be "useless" to designate separate sections of the 100-mile long Florida Reef as sanctuaries without a comprehensive study of the entire chain.

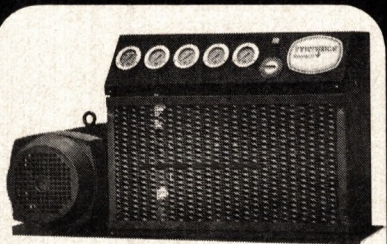
NOAA official Philip Johnson agrees with Premetz that a study of the reef is necessary before a sanctuary could be designated.

The Marine Wilderness Society has initiated a petition drive to urge Secretary of Commerce Juanita Kreps, whose department oversees NOAA, to overrule the delay.

According to Society Information officer Alexander Stone, the fishery council does not have the authority to determine the esthetic and recreational benefits of a reef, or the intrinsic value of a unique area; the main criteria for selection as a marine sanctuary. The responsibility for determining those benefits is charged to NOAA, and Stone feels the agency is under heavy pressure from commercial fishing interests to scuttle the designation.

Looe Key, used for target practice by bombers during World War II, is one of the most virgin sections of the endangered Florida Reef. For information on the preservation effort, write to the Marine Wilderness Society, 103 Aragon Avenue, Suite 7, Coral Gables, FL 33134.

Innerspace Research



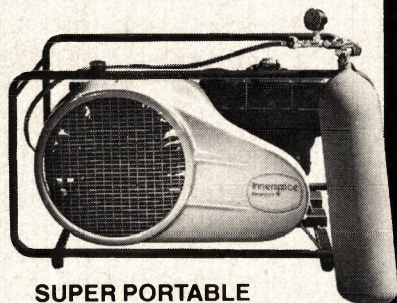
**NEW HIGH CAPACITY
COMPRESSOR—
PURE AIR—5000 P.S.I.
20 + C.F.M.—20 HP
36.2 CUBIC FOOT
DISPLACEMENT—
ELECTRIC, DIESEL,
GAS—WORTHINGTON
RELIABILITY WITH
INNERSPACE
RESEARCH EXPERIENCE
MODEL H5000 EA 20**

- Completely automatic for continuous operation
- Complete filter system
- 5000 P.S.I. @ 20 + C.F.M.



**FINEST 3 C.F.M.
COMPRESSOR AVAILABLE
No quality compromise
for weight or size
MODEL H5000 GA 3**

- Gas • Electric
- Highly portable • 80 lbs.
- 5000 P.S.I. 3 C.F.M.



**SUPER PORTABLE
205 LBS. DIESEL UNIT
MODEL H5000 DA 7**

- Gas • Electric • Diesel
- 147 lbs. (gas) • 205 lbs. (diesel)
- 5000 P.S.I. 7 C.F.M.

4780 E. 11 Ave. / Hialeah, Fla. 33013

305 681-1462

Compressors from 3 C.F.M. to 50 C.F.M.

RESORT UPDATES

Fiji

Scubahire has just acquired a new 42-foot dive boat named *Fiji Diver*. The new vessel has a 14-foot beam and is licensed to carry 66 passengers on day trips. Other features are a full width diving platform, two boarding ladders, bright lights in the stern for night diving and a cutaway transome ideal for divers assembling diving and camera equipment. The boat is powered by two 86 horsepower Lees Ford diesels.

Many precautions were taken for safety with features such as a 7 man, unsinkable lifeboat with a 20 horsepower outboard and special diving floats and lines. The vessel is equipped to insure the greatest possible precautions are taken for safe and enjoyable diving.

Key West

The U.S. Naval Station is closed again; the shrimping isn't what it used to be, and Jimmy Buffett has moved to Aspen, but the economy of Key West has never been better.

Key West is in the midst of one of the most massive civic restoration programs in the United States. The project is restoring the resort that was the social nerve center of Key West in the 1920's, the Casa Marina Inn. Closed as a hotel since 1962, it will have a two-phased re-opening this coming winter season after a \$10 million dollar renovation and expansion currently underway.

The hotel faces the Atlantic with approximately 1100 feet of ocean beachfront and occupies a 6.5 acres site on the southeast corner of Reynolds and Seminole Streets in Key West. It was recently bought by Cayo Hueso, Ltd. and will re-open as a Marriot Inn.

Because the hotel's present 200 rooms are small they are being converted into 100 large rooms, many with walk-out patios and balconies on the ocean side.

A new wing of 150 modern rooms is being built along Seminole Street and is scheduled for an early Spring opening. A 600-person convention center is being built along with a ballroom that will have sound-proof partitions forming rooms to accommodate five simultaneous meetings of smaller groups.

Other facilities being installed in the renovation will include a 200 person capacity restaurant to be known as "Henry's", "The Calabash", a cocktail lounge, plus the "Sun-Sun Hut" cabana bar and an oceanfront dining and entertainment area.

The hotel is convenient to marinas, charter fishing, scuba diving, conducted historical sightseeing tours and shopping in Old Key West's Mallory Square.

Some of the restoration has been particularly exciting. With Key West being surrounded by the sea, potable water has always been hard to obtain. Every day six million gallons are pumped to it from a wellfield on the mainland. Casa Marina won't be needing their assistance.

Below the Casa Marina are cisterns filled with rainfall that will meet the demand. Divers were sent below the hotel to check out the situation and found crystal clear water filled with enormous crabs living in a world without predators, and tense scorpions unaccustomed to the divers lights. Don Kincaid and Spencer Wickens, the divers chosen for the task, found that the most encouraging thing they've discovered so far in their survey is that scorpions do sink and drown.

Drinking water was not the problem for the hotel but water for the extensive landscaping that has been planned is.

The exploration brought some unexpected surprises to the owners of the Marriot Inn. Two supposedly non-existent cistern networks were uncovered, bringing the system's estimated capacity to nearly two million gallons.

Current cost estimates of a new water line to Key West to replace the 38 year old main run around \$35 million, and are climbing steadily. However, the Casa Marina system, now completely mapped by Kincaid and Wickens, will keep the facility safe from shortages.

Red Sea

Aqua Sport International Red Sea Diving Center Ltd., Israel, is now a P.A.D.I. training facility. Aqua Sport offers all P.A.D.I. members a complete diving Safari along the coast of the Sinai Red Sea.

Scuba ADVENTURES

**Dive the Caymans
Bahamas, Belize, Cozumel,
Roatan, Honduras, Cuba
and other Caribbean
dive spots.**

Weekly group rates available.

Commissions to Dive Centers and Travel Agencies.

Check with your local
authorized Scuba Tours

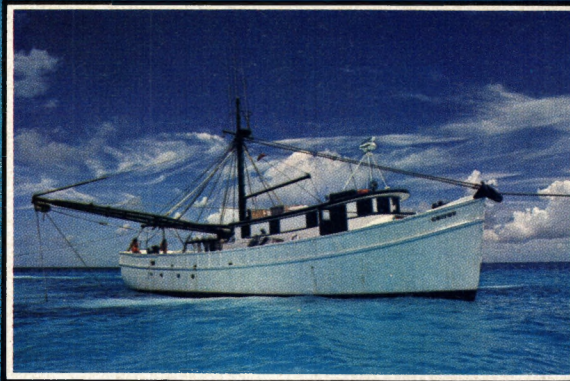
International Dealer or contact:

**Scuba Tours
International**

A Division of Merito Travel Agency
Lincoln Center • 5401 W. Kennedy Blvd. Suite 131
Tampa, FL 33609 PH 813 879-4255



PROFILE



Story and photography by Janice Prater

ROBERT MARX

Underwater Explorer

In the past two decades the locating and salvaging of historic shipwrecks has changed immensely. What was once an undertaking by adventurous divers searching for artifacts and, sometimes, gold has become the province of trained archaeologists and diver technicians using sophisticated electronic equipment.

The one man whose career and abilities have successfully spanned this transition is Bob Marx, a name that, to many, is synonymous with treasure and historic wrecks.

Marx has been involved in diving adventures nearly all his life. He was born in Philadelphia, Pennsylvania, in 1933, and his interest in diving was kindled by a gift of underwater goggles at the age of 10. At 13 he ran away from home to be a salvage diver, and eventually joined the U.S. Marine Corps. There he was in charge of salvage operations and trained nearly 5,000 Marines in his diving school. During an expedition off Cape Hatteras, he made his first major discovery when he located the legendary Civil War ironclad, the *USS Monitor*.

Marx has discovered fresco ruins in unknown Mayan temple sites, recovered artifacts from the cenotes (sinkholes) of Yucatan and located numerous Spanish, French, English, Dutch and Portuguese wreck sites in Caribbean



Bob Marx with an anchor he found off Cozumel in 1955 (above).

waters. His discovery of the shipwreck *El Matancero* in 1959 was declared by the Smithsonian Institution to be the richest merchant ship and most important marine archaeological discovery yet made in the Western Hemisphere. Marx was to receive one-half of all the artifacts discovered, except those declared to be of "intrinsic archaeological value" by the Mexican government. After four years, when the salvage work was done, the Mexican government claimed all of the artifacts.

Marx has found 15 to 20 million dollars worth of artifacts but has benefited very little from the treasure. "The reason is that over two-thirds of what I found was for other governments, knowing ahead of time this was their money, and that I was going to be paid to do a job as an archaeologist," Marx said. "You don't make money from treasure hunting, but you do from the side products if you know how to write." Marx is the editor-in-chief of

Argosy's Treasure Hunting Annual and adventure editor for *Argosy's* monthly issues. He speaks often at film festivals and is the author of 24 books. His wife, Jennifer, often dives with him and has published her own book, *The Magic of Gold*. "We've made more money to finance my searches from writing articles, books, movies and lectures than we have from finding treasure," Marx said.

Now, Marx is exploring the site of eight Spanish ships which sank in a hurricane in 1733. He and his crew put in 13-hour days in the reef-fringed waters off the Florida Keys, looking for artifacts from the ships. Sometimes he works an area where 20 ships went down in bad weather in 1622. The most promising site is called "Coffin's Patch" and is covered by protective sands and shallow, storm-tossed water.

When a ship sinks in a temperate zone of the ocean, the wood is immediately attacked by voracious teredo worms. Worm-eaten and rotten, the wood breaks apart and falls to the bottom where it is soon covered by sand. Metal objects corrode and are encrusted by particles of sand, often cemented together by living coral. It takes experience and a keen eye to detect artifacts under these conditions.

In 1972, Marx found the *Nuestra Señora de las Maravillas*, a treasure galleon that sank in 1656 in 35 feet of water north of the Bahamas. The *Maravilla* carried 5.5 million pieces of eight: 260 tons of silver that made her the second richest wreck in the Western Hemisphere. (The richest is a ship that was lost off Cartagena, Colombia, in 2,000 feet of water.)

"I first became interested in the story of the *Maravilla* in 1960 while doing research in the Archivo de las Indias in Seville," Marx said. "After locating more than 12,000 pages of documents dealing with this ship — including a copy of her original cargo manifest, which listed and described every item she was carrying when lost — I came across a 144-page book published in Madrid in 1657 by one of the survivors of the wreck. He was Dr. Diego Portichuelo de Ribadeneyr, a gentleman who wrote an exciting and vivid account

of everything he observed from the time he boarded the *Maravilla* until he reached Spain more than a year later. I also found three nautical charts showing the precise location of the shipwrecked *Maravilla* and knew then that she could be located with the right equipment."

Marx spent two months of each year for the next 12 years trying to find the lost ship. Disbelievers dubbed it "Marx's Phantom Wreck", but Marx refused to give up.

"The way we finally found the wreck was a fluke," Marx explained. "Every day I would go to the site of a modern wreck to test the magnetometer, which detects ferrous metals. On August 20th we were about to head for port to get supplies, but when we pulled the anchor up we found two Spanish-type ballast stones stuck in its flukes. The *Maravilla* was exactly where the Spanish documents said it was. We found many parts of a modern wreck mixed in with the *Maravilla*, so we got tricked. We have been anchoring over her all along. I probably found the wreck ten years before I knew it," Marx said.

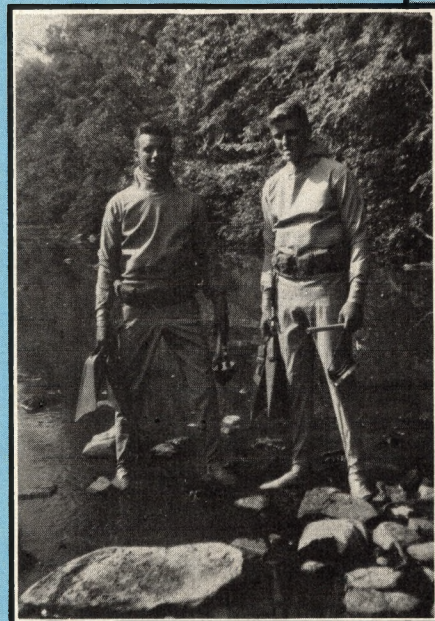
So far, only a small part of this inordinately rich wreck has been retrieved. "According to the documents, the bulk of the ship's treasure was in the main hull which had broken away from the bow and was lying in another section of the wreck. I surveyed the area with a metal detector and discovered the fluke of a large anchor protruding from the sandy bottom. Digging down only a few feet, I clutched silver coins all dated from the period of the wreck — I had found the mother lode!"

Marx has yet to salvage this part of his fabulous treasure galleon. The crew overheard a radio message from Nassau police, ordering a launch to bring them in. Marx rushed back to where he had found the bulk of the wreck, dragged the anchor away and dumped it in another area. Convinced that only he could find the site again, he went back to port.

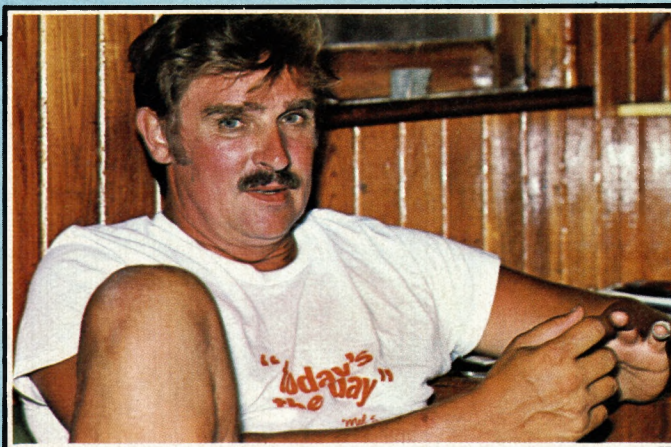
The Bahamian Government suspended Marx's salvage lease during the ensuing arguments over rights to the treasure. Marx publicly accused the Bahamian Government

of illegally seizing the wreck and its treasure. Eventually his salvage lease was reinstated, but Marx was forbidden to work on the wreck. Until he is allowed to supervise the recovery, he refused to reveal the location of the mother lode. Thousands of dollars have been spent by others looking for the main hull, but so far no one knows of its whereabouts — except Bob Marx.

Meanwhile, Marx has plenty to keep him busy. He excavated what is generally described as the greatest deposit of 17th century artifacts in existence when he worked the site of Port Royal, the sunken city on the south side of Jamaica. The English captured Jamaica from Spain in 1655, and it became known as the "Treasury of the West Indies", home base for pirates attacking Spanish treasure fleets en route from the Indies to Spain. Then in June, 1692, three strong earthquakes dumped most of the city into the sea. In 1966, the government of Jamaica requested Marx's supervision as an



Marx and L. P. Flowers pose in early diving attire while in the U.S. Marines, 1952.



Diver, author, archaeologist and adventurer, Robert Marx's next project is to build a replica of a Phoenician ship and sail it from the Middle East to America.

archaeologist, and for the next three years, he methodically mapped and recovered artifacts and relics from the old city. *National Geographic* said, "... the list of his finds is astounding and are a tribute to Marx's energy and ingenuity."

That energy and ingenuity has made Marx one of the nation's most admired and outspoken treasure hunters. To the general public, the term "treasure hunter" means a person who searches only for gold and silver. But treasure hunters comprise a varied group of underwater explorers, history buffs, sport divers, and archaeologists.

"To be in this business you have to be a combination of not just a diver or an archaeologist, but a historian, a meteorologist, an oceanographer and a

linguist," said Marx. "Even some knowledge of shipbuilding will help." All these things tie in together. To earn a degree in archaeology, you study ancient civilization and early man, which just isn't enough. Some land archaeologists and politicians are attempting to pass laws preventing sport and commercial divers from salvaging artifacts from wrecks. One politician has vowed to stop treasure hunters from ripping up wrecks, claiming that one day there would be nothing left for our children to swim through. But there is nothing visible on these wrecks to begin with, much less something for our children to 'swim through,'" Marx added.

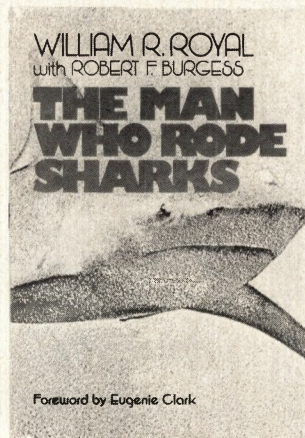
"A lot of wrecks in this hemisphere are in ports, not so much on the coast of Florida because we don't have any ports, but the greatest majority of Revolutionary War wrecks are lost in places like Boston, Long Island Sound or the Connecticut coast, and are being dredged up, not just to make channels or deep ports, but to pump sand to make new beaches. I watched three old wrecks get thrown up by a dredging operation pumping sand to make the beach pretty in Fort Pierce," Marx continued. "This is how the wrecks are being destroyed. Every time a cruise ship, freighter, tanker or any vessel comes into Port Royal, Kingston Harbor, they drop their anchor

right on a sunken city. It rips the buildings and artifacts to pieces, and when they pull it up, it does the same thing."

"Some wrecks are dangerous and should be found," Marx said. "In 1614, twenty ships went down off the tip of Yucatan. I found six of them to be carrying 260 tons of mercury in ceramic flasks. The ships were in ten to twelve feet of water. Mercury in the water is poisonous and kills everything. One good hurricane in the area would break those containers, and 260 tons of mercury would pollute the water. The only business in that area is commercial fishing. So there are wrecks that should be salvaged, not just for the historical value, but to protect the ocean and ourselves," Marx declared.

continued page 92

REVIEWS



The Man Who Rode Sharks
William R. Royal with Robert Burgess; Dodd-Mead; 1978; Hardbound ; 248 pages

Robert "Believe It or Not" Ripley would have had a field day with the career of Bill Royal. Beginning with his introduction to diving in the Pacific, Royal's life has been anything but ordinary. He's chased sharks for several scientific research teams, including Eugenie Clark's experimenters at the Cape Haze Marine Laboratory (now called Mote Marine Laboratory) at Siesta Key, Florida.

Sometimes the chasing and capturing included bulldogging a recalcitrant "test subject" by hand.

Royal's other exploits center around the fabulous prehistoric "graveyards" beneath the surface of Little Salt Spring and Warm Mineral Springs (see *Sport Diver*, Volume 2, Second Quarter 1978).

Royal initially discovered what he believed to be very ancient human bones and artifacts in those two springs near Sarasota, Florida, in the late 1950's. His repeated attempts to interest scientists in the finds were continually

frustrated by short-sighted experts. Royal's incredible good luck in locating fossils — which included uncovering a human skull with intact brain matter in front of an NBC film team — led to suspicion of fraud by the scientific community.

A more thorough investigation of Warm Mineral Springs by State Archaeologist W. A. Cockrell in 1972 proved Royal's discoveries were genuine. Since that time, with Royal's help, state research teams headed by Cockrell have uncovered a plethora of evidence that pushes back the first known appearance of man in Florida to around 10,000 B.C.

Royal has paid dearly for his adventures. A hipjoint was replaced several years ago to shape up bones weakened by aseptic bone necrosis, but Bill's still diving — and likely will be as long as he can hold a regulator in his mouth.



Bahamas Diver's Guide
Shlomo Cohen; Seapen Books; 1977; Hardbound; 184 pages

The *Bahamas Diver's Guide* provides in-depth coverage of more than 30 choice diving areas with quality photos and precise directions.

Shlomo Cohen, who wrote and designed the book,

shows his considerable talent in both fields. The clarity of the presentation is enhanced by the use of transparent overlays with the map of each diving area. Directional lines, bearings, and depths are marked on the transparencies over both maps and aerial photographs of the sites.

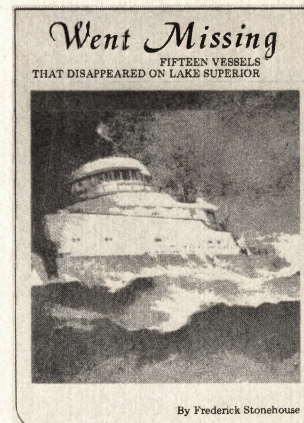
The *Guide* also includes a short history of the islands, a fish index and a chapter on medicine and emergency procedures. The comfort index provided information on lodging, dive stores, weather and tourist flow.



The Sea I Love
Shlomo Cohen; Seapen Books; 1977; Hardbound; 82 pages

The Red Sea is Cohen's backyard, and he covers this great reef area in narrative style, illustrated with a large number of full color photographs and illustrations. Many fish species unique to the Red Sea are depicted by Cohen and the other contributing photographers.

As usual with Cohen's books, this one is well thought out and designed, with attractive graphics and clean lay-outs. Cohen's writing sometimes suffers in the English translation, but the overall effect is pleasing.

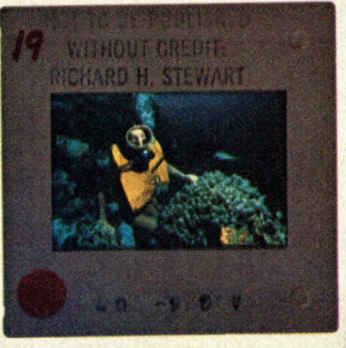
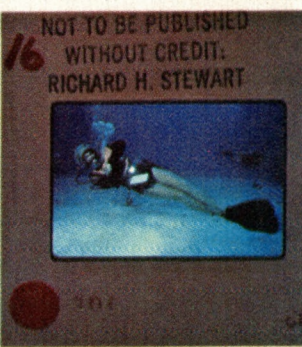
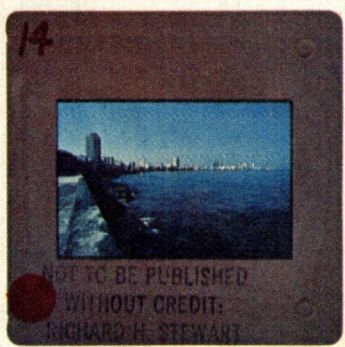
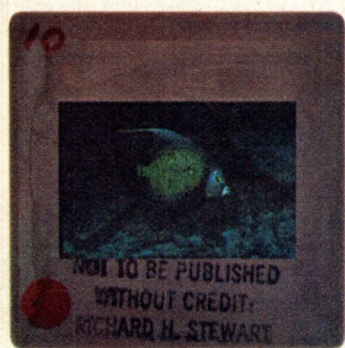
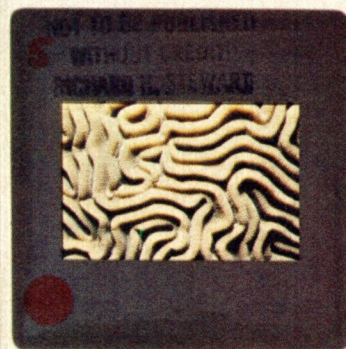
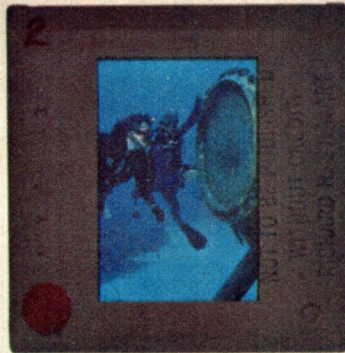
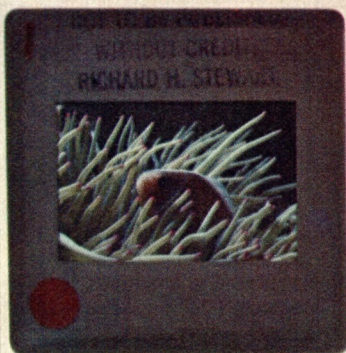


Went Missing: Fifteen Vessels That Disappeared on Lake Superior

Frederick Stonehouse; Avery Color Studios; 1977; Softbound; 117 pages

Frederick Stonehouse is as knowledgeable about Lake Superior shipwrecks as anyone you'll find. His insight into the probable causes of wrecks and their location are based on extensive research in libraries underwater. In this volume he recounts the cases of 15 ships that disappeared on Lake Superior leaving no survivors or eyewitnesses. Stonehouse has theories on why each ship went down and on the possible location of each. He is waiting, he says, for divers to prove him right, or, possibly, wrong.

Aside from the information it contains on the mysterious incidents, the book is a fascinating document of Great Lakes shipping and change in ship construction from 1735 to present. The first wreck covered is that of the *Merchant* in 1847, the latest is the *Kamloops*, which sank in 1928. In all cases, Stonehouse brings to bear his considerable knowledge of the Lake to try and "solve" the sinkings.



Underwater Photography

Preparing Your Material for Publication

by Richard H. Stewart

Underwater photography is not a crowded profession. Until recently this was due in part to a lack of markets for high-quality underwater photos — but that situation is changing.

With the rapid expansion of sport diving and scientific and government-sponsored ocean research, the need for talented diving photographers is growing. As biologists and geologists begin probing lakes, quarries and the sea, more photographers are needed to provide documentary and illustrative photos.

With this research has come increased media coverage and interest. National Geographic prints features on underwater research regularly and the other national news media are picking up the beat as science turns to the sea. Playboy and Penthouse have both printed underwater recreational features as have numerous travel publications. In addition there are now more diving publications than ever: Sport Diver and Skin Diver in the U.S.; Diver and Dive in Canada; Skindiving in Australia and New Zealand; Dive in England; Tauchen in Germany; Oceans in France; and Mondo Sommerso in Italy are some of the more prominent. Throw in the numerous underwater film festivals held in the U.S. alone each year and you have the beginnings of a lucrative marketplace.

Don't let me mislead you — right now the pay is not great, and for every published photo you take you'll spend days of bottom time pushing the shutter release. But after all that, the thrill of seeing just one photo published with your byline really makes it all worthwhile.

GETTING ORGANIZED

Before you can submit your photos to a publication you must be able to lay your hands on them. If you're like most of us, your slides or prints end up in a box or a drawer, uncatalogued and hard to get at. Even if you never have a single photo printed, wouldn't it be nice to have everything filed and indexed so you can find the good ones quickly the next time you

want to share them with a friend or give a short talk at the club meeting? If you're an instructor or a store owner, visuals are a great way to attract new clients and stimulate old ones, but you must be able to find your best shots quickly.

There are a number of ways you can store your slides, negatives and prints, but here we are primarily concerned with pre-publication storage. The most effective way to store photos for publication use is in see-through plastic protector pages. These should be available at your local photo retailer in sizes to fit everything from 110 Instamatic pictures up to 4" x 5", 5" x 7" or 8" x 10" prints or transparencies. If the photo store doesn't have what you need, check out the ads in photographic magazines such as Popular Photography or Photomethods.

The plastic pages come pre-punched to fit in a standard three-ring binder. Purchase some binders. Segregating the pages by topic (lake dive, night dive or wall dive), subject (fish, coral or wrecks) or location (Johnson's Quarry, the Florida Keys, the Caribbean) with a quick cross reference should give you the access and information you need.

A file for your verbal information is just as important. For each slide or print you should write a short description giving name of subjects, location, depth and technical data: Camera, film and strobe used, exposure information and date exposed. File a copy of this in the binder immediately; behind the page containing the slides or prints. These sheets may serve as your master file list if you give each plastic page a letter or number designation and each slide on each page a sequential number. Slide A-20 would be located on page A in the twentieth slot.

If you intend to submit manuscripts as well and have written them in advance, file these either with the photos that will accompany them or in a separate notebook by title, subject or location.

Look at your photographs very critically. Are they of publishing quality?

Most professional photographers spend years knocking on doors before the first photo is accepted . . .

Compare them with photographs in the publication you intend to submit them to and see if they measure up. Are they colorful or do they have strong tones if black and white? Are they composed well? Is the subject interesting? Look through your issues of *Sport Diver* — that should give you a fair measuring stick. Refile the dull, the fuzzy and the poorly composed.

By constantly evaluating your material, you may see interesting patterns and groupings emerge. You may find you're building quite a collection of shallow wreck sites, perhaps enough to justify an article on them. Or you may unknowingly have acquired the world's largest collection of photos depicting hibernating frogs. That's got to be a gem for some biologist who's researching cold water frog habitats but hasn't the time or skill to photograph them.

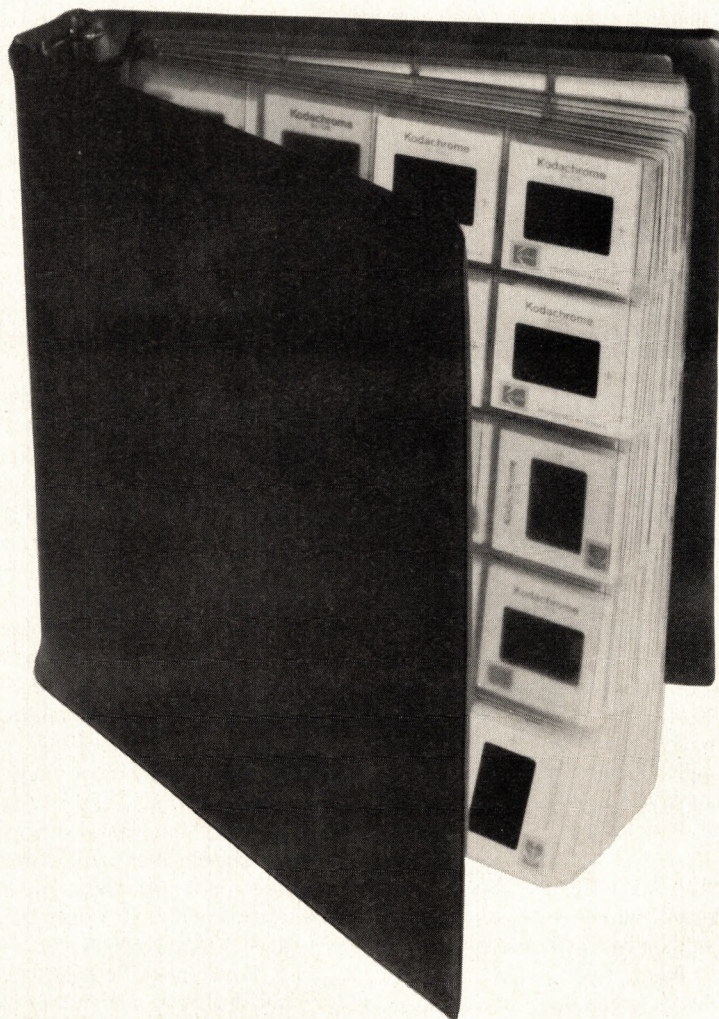
Placing your photos in the hands of someone who can use them may take a while. Most professional photographers spend years knocking on doors before the first photo is accepted, so don't get discouraged.

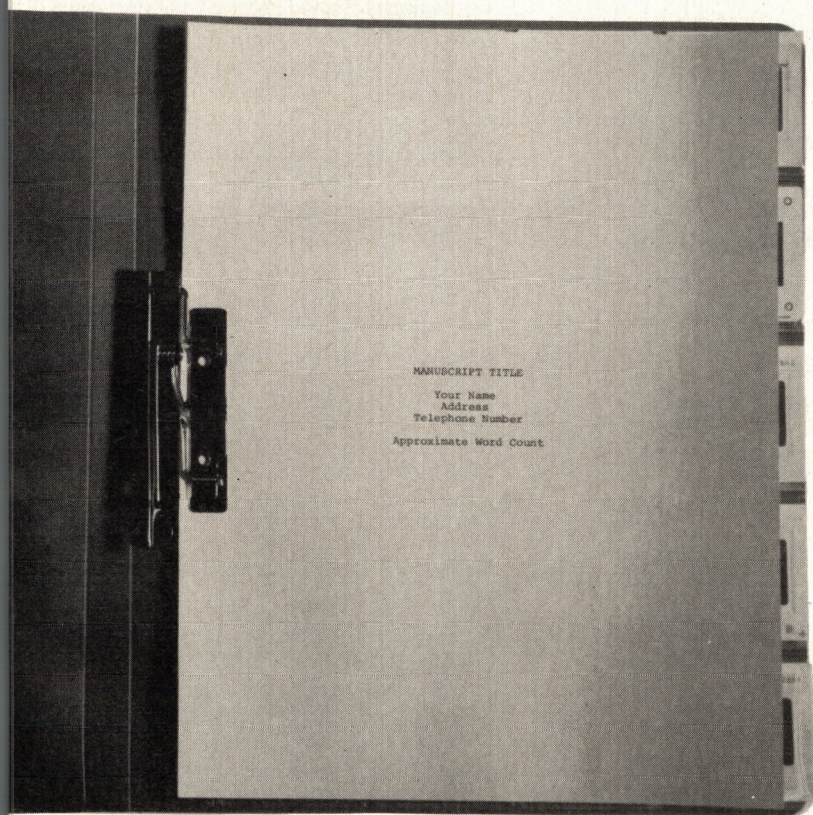
Try and think creatively about your outlets. Maybe the local junior college has a biologist obsessed with hibernating frogs. Check out the travel and diving publications. Talk to the sports or outdoor writer at the local newspaper; if Reggie Jackson hasn't hit a home run or Billy Martin this week, he's probably short on exciting copy and ripe for a scoop on the local underwater scene. If he's not interested, talk to the person responsible for the Sunday magazine insert and sell them on the human interest potential. Those types love adventure stories — especially when they involve prominent community figures, women, children, dogs or the handicapped. And you can always profile the sheriff's underwater search and recovery team.

Having identified your most likely markets, you should then determine how your material will fill their needs. Try to get a feel for their format and style of features and photographs. Look for ways in which your material will best fit their editorial objectives and emphasis. While an outdoor magazine such as *Mariah* might go for a story on whitewater canoeing and diving, *Stars and Stripes* would likely prefer something on military personnel or their wives learning to dive. Reading several back issues of the publication will help. You may also wish to submit photos to the stock files of these publications to be used when the need arises. Just getting your name on file as an underwater photographer will eventually be an asset.

Having identified outlets and determined possible needs, you should

Placing your photos in the hands of someone who can use them may take a while. Most professional photographers spend years knocking on doors before the first photo is accepted, so don't get discouraged.





make a proposal to the proper editor. All magazines are deluged with volumes of unsolicited material, most of which is not used. In order to avoid needless work on your part — preparing a manuscript that misses the publication's editorial point — or by the editor who must review that manuscript, send a letter of inquiry detailing your proposed feature, your publishing credits or work experience in the field and material available (number of photos, length of manuscript, charts, maps, diagrams). He may reply with suggestions that will conform your ideas to the publication's criteria, or he may ask you to submit a shorter or longer feature.

To entice him further you may send a few duplicates of your best photos or a couple of sample paragraphs. Because publications cannot take responsibility for unsolicited manuscripts and photos, NEVER send your original materials until they have been accepted for publication. If your photos are worth selling, they're worth investing a little money in quality duplicates.

When you hear that the editor is interested, it's time to package your goods for shipment. This should be done carefully and professionally. A sloppy package indicates a sloppy attitude, so try and make everything look clean, sharp and efficient.

Your manuscript should be typed on one side of white bond paper, double-spaced with a 65-character line. Leave neat, uniform margins at top, bottom and sides of each page. The first page should be a cover page with the title centered. Your name, address, telephone number and the approximate number of words in the feature should appear just below or in the upper left corner. On each succeeding page your name and the title should appear in the upper left corner and a page number in the upper right.

Have a rubber stamp made up for your slides giving your name, address, phone number and ©1978 (or whatever year you took them in). Stamp each slide mount or the back of each photo and place the photos in a plastic protector page. For slides, mark a colored dot in the lower left hand corner of each mount. Now number the mounts or photos sequentially starting with 1 in the upper left corner of the first page and moving across the page from left to right.

Type out the identifications for each photo submitted, make a copy of it and return the original and the original photographs to your file.

Punch your manuscript, photo identifications and accompanying material with a three-hole punch and place them and the protector pages in a small binder

continued next page

THE INCREDIBLE LAND OF

HAITI

Newly designed dive facilities complete with 26' Robalo/twin 150's and a 28' Anacapi diesel both with dive platform and first aid. New classroom, repair facility, sales and PADI instruction by Wes Skiles, manager.



Only minutes from dive sites; drop-offs, coral reefs and more! Total watersports; sailing, skiing, wind surf plus tennis — and comfortable A-frame resort rooms with low year round rates. Call today or write!

BEACH RESORT, P.O. Box 1253, Port-Au-Prince, Haiti

US Agent: Avant Garde Travel, 1801 Ave. of the Stars, Suite 940, Los Angeles, CA 90067 213/277-3562



DIVE BONAIRE, N.V.

OWNED AND OPERATED BY
PETER AND ALICE HUGHES

*The Angel
of the
Islands!*

Located at the lovely Flamingo Beach Hotel. Scuba or snorkel 365 days. Modern, comfortable facilities included new van, boats and compressors. Expert instruction.

Dive Bonaire, P.O. Box 686, Ithaca, New York 14850

800/252-6323 N.Y. Only or 800/847-7198 All Other States

Merry "Scuba-Do" Christmas

What to get your diving partner for Christmas?



If he or she has a regulator, fins, tanks, strobe, weights, belts, snorkel, speargun B.C., boat, compressor and a dive shop, there's not much left to get them.... except...THE SCUBA DO ALBUM. The Hottest selling Album in the diving market (The only album in the diving market)

Send check or money order to:
Barefoot Records - Box 1249
Grand Cayman Islands, B.W.I.
\$8.50 includes postage.
Use 30¢ postage to the
Cayman Islands.. and order
early for Christmas.

Underwater Photography

continued from previous page

such as those sold for student reports. Put the manuscripts in first, then diagrams, photos, then the identifications. Write a cover letter stating why you are sending these things (i.e. "as per your request of October 10th") and place the binder and letter in a large envelope between two pieces of corrugated board for protection. Include another large envelope, pre-stamped with your return address on it as many publications will not return your material any other way.

Mail this package by registered mail requesting a return receipt and then wait. Be prepared to wait 90 to 120 days for a reply, most editors are busy people. If you do not hear anything in due time, send a follow-up letter, enclosing a self-addressed, stamped post card with places for someone to check "retaining material for future consideration", "accepted for publication", or "we are not interested at this time". It may not provoke any action but at least the temptation is there.

You'll probably get ten or more "not interested" responses for every "retaining for future consideration", but that's to be expected — everyone gets them. F. Scott Fitzgerald's first novel was turned down by the prestigious Charles Scribner's Sons twice. It eventually became a huge success and is generally credited with igniting the Jazz Age after it was published — by Charles Scribner's Sons. That's when your byline looks really great next to a classy lay-out — and if you'll hang in there, sooner or later it's bound to happen.

Oceanus Cuba Trip Slated

Oceanus announces that, following their successful visit to Cuba in March, they will be returning again next year and are inviting participants and interests sailing yachts to join in this adventure.

This odyssey to Cuba is not the only voyage offered for the winter months. Other trips include sailing the Great Barrier Reef of Belize, diving 16th century pirate wrecks off Honduras, sailing up the lush Rio Dulce River in Guatemala and inland treks by plane, landrover and canoe to caves, Mayan ruins and remote jungle bird refuges.

Contact OCEANUS, Box 431, Ho-Ho-Kus, New Jersey 07423 for further information.

LETTERS

continued from page 10

Phil Trupp's reporting from the Washington "beat" is a definite boost to diver's insight and sport diving's relationship to Big Brother.

Several other diving publications have gone off the deep end and have muddled up the water with "hear-say" facts and other journalistic techniques designed to increase circulation more than inform the diving public. The Underwater Society of America is the national representative of the sport diver in the United States. The Society has active programs in spearfishing, scuba competitions, underwater photography, conservation, anti-pollution, underwater archaeology, safety, underwater hockey, and a national awards system.

Wreck diving is a sport enjoyed by many sport divers. Any national or local legislation against the rights of the sport diver is contrary to the philosophy of our organization. Legislative restrictions must be completely researched and projected before being passed through the halls of Congress or the City Council.

The statements attributed to Mr. McKinney by *Divers World* and *Skin Diver* have brought much mail across my desk. I agree with you that "In our own best interest, let's stop shouting and start thinking. Otherwise, we'll be the ultimate losers."

Diving is a minority sport; support the national organization, the Underwater Society of America. The Society has supported diving for almost twenty years.

W. Lee Morris II
President

NORLANTIS

Since March, North Atlantic diver have been surprised, delighted, and absorbed in the new underwater journal, *Norlantis*.

As their name suggests, *Norlantis* is about the North Atlantic underwater world, but also reports on other areas such as the Great Lakes. Divers and ocean enthusiasts alike will be reading as their first editorial warns, "the good, the bad and the boring." Their editorial direction is pretty obvious, honest reporting of local dive sites, marine life, ecology features and a supportive role in the legitimate interests of divers. *Norlantis* is published six times a year in Saxonville Station, Massachusetts. For more information write: P.O. Box 3175, Saxonville Station, Massachusetts 01701.

For years, the compact, rugged Nikonos has been the standard for underwater 35mm photography. It's the only camera that needs no bulky housing, lets you shoot at depths of 160 feet, and comes up with pictures that testify to the quality of its famous Nikkor lens. And, the latest Nikonos III is the fastest and easiest handling yet.

It's also the most versatile camera you can take below—in fact, it's a whole underwater system. Choose among four super-sharp, interchangeable Nikkor lenses, a precision closeup outfit that takes you within inches of your target, underwater flash, and more—all built by Nikon specifically for use with the Nikonos camera—even an underwater exposure meter.

Don't go below without your Nikonos!

Great for out-of-water photography, too—boating, skiing, in rain or snow, wherever you wouldn't risk using any other camera. Get to know the unique Nikonos system, at Nikon camera dealers and dive shops. Or write for Lit/Pak N-24 to Nikon Inc., Garden City, N.Y. 11530. Subsidiary of Ehrenreich Photo-Optical Industries, Inc. (In Canada: Anglophoto Ltd. P.Q.)

Nikonos III by Nikon



BECOME AN INSTRUCTOR TRAINER...



LEARN TO TRAIN AND CERTIFY SCUBA INSTRUCTORS

A licensed Ed Brawley Instructor Trainer can teach and certify scuba instructors.

PDIC now offers you the opportunity to be a part of the only legalized teaching system in diving.

- Be protected by the state of the art.
- Codes and standards are clearly defined.

For experienced instructors, an intensified 7 day program is available.

Bring a valuable skill to your employer. Add a new dimension to your business.

Approved by State, VA, PADI & SSI.

Write or telephone for information on:

#420 #620

(please enclose \$1 for College catalog)

Name _____
Address _____
City _____
State _____ Zip _____

SD0778



**Ed Brawley's
Professional Diving
Instructor College**

598 Foam St., Monterey, CA 93940 (408) 373-3671
373-3672

ROBERT MARX

continued from page 84

Marx is caught in the middle of the current disagreement between archaeologists and treasure hunters. He is a founding member of the Council of International Underwater Archaeologists, but opposed the stand against treasure hunters. "I have tried for twenty years to get the archaeologist and the treasure hunter to sit down together and admit they need each other," he said. "It wasn't the archaeologist who built the magnetometer, the blaster or any of these exploration systems — it was the treasure hunter. The first time any treasure was ever put on display, any place in the world, was in 1948, by Art McKee, a treasure hunter. The next treasure museum built, which is the largest of all, is the 'Museum of Sunken Treasure', at a cost of 2.5 million dollars, and that treasure didn't come from state, federal or university archaeologists. It all came from the treasure hunter. The archaeologist needs the treasure diver, and I never met a treasure diver that wouldn't be happy to work with a professional archaeologist."

Like all archaeologists, Marx carefully collects and labels his finds. The treasures on board the *Grifon* when I dived with Marx included several pieces of ship's rigging and numerous fire bricks that were used on board the Spanish galleons for cooking. We also found three silver coins, and a small, silver snuff box. Later in the week, two intact muskets, part of a gold-plated diving sector, wood and brass hinges and a two-ton anchor were added to the list of discoveries. It is incredible how the coins, pottery, and metal objects marking the site of this wreck have been preserved by the sea over such a span of time.

Metal pieces, such as the silver coins, are difficult to identify because the formation of a crust of sand or a calcareous deposit is the first apparent effect of immersion in sea water. It is known that several chests of 1732-1733 coins were lost when these Spanish ships went down. The coins, the famed "pieces of eight", are the ancestors of the modern American dollar. They are stamped with the Pillars of Hercules (Gibraltar) and so acquired the name Pillar Dollars. In 1732, Crown officials took over the operation of the Mexico City Mint where these coins were stamped, so the 1732 coins were few and not extensively circulated. Today, the 1732 Pillar Dollar is very rare and valued as high as \$8,000 to \$9,000 each.


Still, Marx is less interested in the monetary value of his artifacts than he is in

his latest venture: sailing an exact replica of the Phoenician ship across the ocean, supporting his theory of pre-Columbian voyages to the New World. He has already successfully sailed a replica of Columbus' smallest ship, the *Nina*, using only 15th century equipment to re-create the route and living conditions of the voyage of 1492. He was made a Knight Commander in the Order of Isabel the Catholic by the Spanish government as a result of this voyage — and is officially Sir Robert Marx.

"Ever since I stumbled across Mayan ruins in the middle of the Yucatan jungle with frescoes depicting men with European features standing in galley-like vessels, I was convinced that Columbus was not the first Old World mariner to reach America," Marx said. "But for me to get the message across about who the Phoenicians were, I have to duplicate the voyage under the same conditions they did. Everything during the voyage will be authentic. No life saving equipment, radios, maps or navigational aids will be used. The only exception will be the use of cameras to record the trip. I have 26 graduate students of Mediterranean history at the University of Haifa doing their master's thesis on different aspects of this voyage," Marx continued. "They're researching the food, clothes and other information on the Phoenicians." Marx has explored the ancient Phoenician seaports of Byblos, Tyre, and Sidon in Lebanon and excavated several Phoenician shipwrecks. With that data, he and the leading authorities in that field will build a replica. "I'd like to build it in Tyre, Lebanon, which was the main Phoenician port, if we ever have peace there, or I may do it in Acre, Israel."

Those long range plans will depend on internal conditions of the countries involved and may take some time. Until then the Panamanian Government has given Marx a ten-year exclusive excavation lease for all the waters of Panama. "Normally you don't get the rights for a whole country. Usually you get lease for a particular wreck or a ten-mile-square zone. Last year I spent three or four months down there and found 44 wrecks," Marx added proudly.

With a government lease and an experienced crew, Marx and the *Orifon* are back in action after several years.

The "good old days" of tracking a galleon by its ballast have given way to searchers armed with an array of electronic equipment. Either way it takes a good eye and a good head for research to track down and locate a wreck that may have been covered for centuries. Bob Marx has both of those and a third quality — a nose for the undiscovered. 

Scuba Institute - PDIC Training

Don Brod, founder of the Scuba Institute in Austin, Texas, has combined his knowledge with Ed Brawley, founder of Professional Diving Instructor's College, to formulate the first instructor training program geared specifically to inland diver.

There are differences in the techniques used to teach students freshwater diving. Don Brod has combined these elements with the PDIC course to equip the inland instructor with the skills to successfully instill confidence and ability in his students.

The SI-PDIC course includes approximately forty hours of in-water training at the SI training facility on Lake Travis. Field trips include a rock quarry, swift water river, clear spring and the Gulf of Mexico.

For more information contact: Don Brod, 4320 North Lamar, Austin, TX 78756.

Greenstone Award Slated

The Leonard Greenstone Diving Safety Award will be presented at I-Q 10, November 12th. The award is administered by NAUI, but membership in the organization is not a consideration in the award.

The award is presented, usually once a year, for a minimum sum of five hundred dollars for the most outstanding contribution toward sport diving safety.

Contributions eligible for the award can be anything from a unique approach, idea, device or program concept which is conceived, developed and implemented by the same person, to a person who over a period of years worked on the conception and development of many less significant ideas.

Since the award's inception in 1974, the following recipients have been honored: Merrill P. Spencer, Lee H. Somers, Glen H. Egstrom and Charles V. Brown.

Leonard Greenstone, founder of the award, has been actively diving for over 30 years and has involved himself in virtually every aspect of recreational sport diving, as well as the commercial diving community. As a NAUI instructor, Lenny has served the organization in a leadership capacity at Instructor Certification Courses and pioneered the Industrial Orientation programs of the early '70's.

For more information, contact: Judy Pierce, Chairperson, Greenstone Award Selection Committee, P. O. Box 630, Colton, CA 92324, (714) 783-1862.

ikelite

UNDERWATER SYSTEMS
3303 N. ILLINOIS ST.
INDIANAPOLIS, IN. 46208
P.O. BOX 88100

Manufacturers of underwater lighting, direction, photographic equipment. Ask your pro shop or send \$1.00 for catalog and free "Capture the Sea" sticker.



slr

The IKELITE SLR CASE was specifically designed for 35mm single reflex cameras. The housing allows optimum thru-the-lens viewing and use of behind-the-lens meters. Molded of clear GE Lexan®, all sealing surfaces and camera functions are visible, plus eliminates condensation and corrosion problems common to aluminum housings. Only 4½ pounds above water, slightly negative or positive buoyancy depending on the camera, with safe working depths of 300 feet.

strobe

In 1977 IKELITE introduced the Solid State Triggering (SST) System to be used in all strobe housings to insure dependable firing. The SST System has proven to be the most dependable system on the market for firing electronic flash underwater. All IKELITE strobe housings feature the Solid State Triggering device. The SST device is incorporated in the p.c. cord or in our hot shoe design.

NATIONAL SCUBA REPAIR



**DIVING EQUIPMENT REPAIR
IS OUR ONLY BUSINESS**

3 Day Service

Ultrasonic cleaning • Complete diagnostic test facilities
Complete parts inventory - Current and Obsolete
Hyperbaric chamber • Factory trained personnel
Hydrostatic testing and tumbling facilities

Single hose regulator overhaul.....	\$10.00
Double hose regulator overhaul.....	\$12.00
Valve overhaul (J).....	\$7.00
Valve overhaul (K).....	\$4.50
Twin Manifold (J).....	\$13.00
Twin Manifold (K).....	\$12.00
Hydro test (Single tank).....	\$9.00
Hydro test w/tumble (1/2" valve).....	\$14.00
Hydro test w/tumble (3/4" valve).....	\$13.00
Disassembly and Reassembly charge (twins).....	\$5.00
Overhaul standard depth gauges.....	\$7.00
Overhaul submersible pressure gauge.....	\$7.00

**SEND YOUR EQUIPMENT NOW
or write for complete price sheet
DEALER INQUIRIES INVITED**

**16442-B Gothard St.
Huntington Beach, CA 92647**

Anchor International, Inc.

Complete underwater
photo systems and diving
equipment.

Dealer inquiries invited.

**315 W. Ogden Avenue
Westmont, IL 30559
(312) 971-1060**

• Wholesale Only •



**NEW DIVER'S HEADQUARTERS
IN MEXICAN CARIBBEAN
EXPLORE HIDDEN CAVES,
MANGROVES AND CORAL REEFS.**

- Full SCUBA • sales and rentals
- u/w photography • slide room
- trips and group packages • rooms on beach •

**P.O. Box 289, Cozumel,
Q Roo, Mexico Ph. (987) 20627**

New NAUI Logos

During the March 1978 Board of Directors meeting, newly designed logos for NAUI Canada and NAUI U.S. were formally voted on and accepted.

NAUI Canada took the lead on the project by forming a committee to design a logo for the Canadian Underwater Conference. The committee went to Mr. John Orr, a NAUI diver, who is a professional graphic artist.

Many generations of artwork later, John presented the committee with a strong graphic mark that was suitable not only for the conference, but also as a representation for the NAUI family.

Both NAUI Canada and NAUI U.S. have t-shirts, emblems and other specialty attire featuring the new logos.

For order information contact:

**NAUI Headquarters
P.O. Box 630
Colton, CA 92324
(714) 783-1862**

**NAUI Canada
P.O. Box 510
Etobicoke, Ontario, Canada
(416) 621-0783**

SCUBA ACCESSORIES

*Original design, beautifully crafted belt
buckles and medallions especially for the
diver . . . shop early for Christmas.*

- Medallion orders receive a free key chain and gift box.
- Any orders over \$17.00 receives a free patch. (Similar to square belt buckle.)
- Belts available in black or brown — state size and color — \$5.00 each.

**Original Design (Sq. Design)
Buckle 3" x 2" Brass \$6.95
#707-B 24 K Plate Gold \$29.95**



**Scuba Center
Buckle 2 1/4" Brass \$6.95
#708-B 24 K Plate Gold \$29.95
Medallion 1 1/2" Brass \$5.95
#708-m/k 24 K Plate Gold \$12.95
Not Shown**

- Buckles and medallions custom made for clubs, companies and organizations.
- All products shipped UPS — Allow 15 days for delivery.



**Wreck Design
Buckle 2 1/4" Brass \$6.95
#709-B 24 K Plate Gold \$29.95
Medallion 1 1/2" Brass \$5.95
#709-m/k 24 K Plate Gold \$12.95
Not Shown**

Dealer Inquires Invited.

CREATIVE METALS CO.

**13 Roosevelt St., Lake in the Hills, Illinois 60102
PHONE: (312) 658-8260 or 658-7070**



An Afternoon's Delight in PANAMA CITY, FLORIDA

Underwater Photography

By Ned DeLoach

Story

By Steve Blount

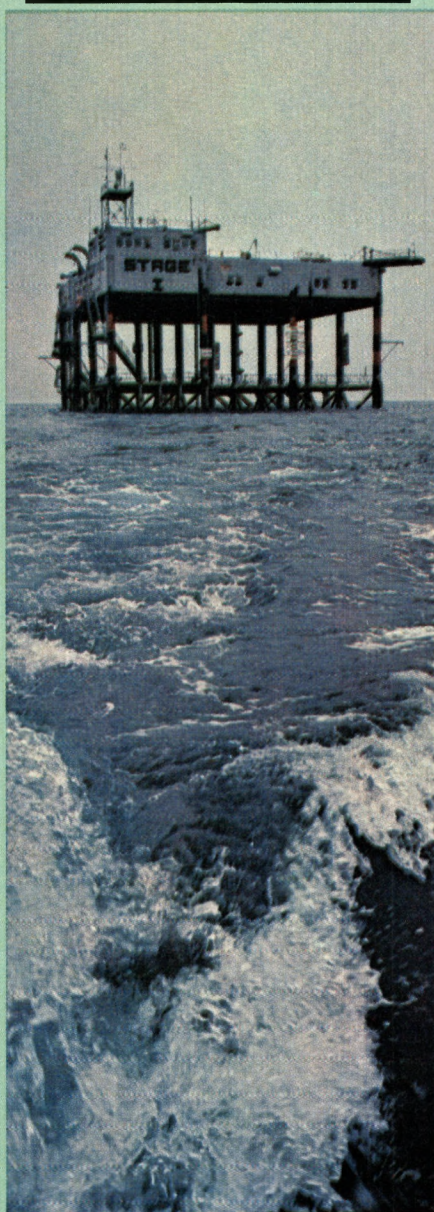
Panama City is a Florida resort town. Like its more famous sisters it has a strand of golden beach, warm water and a gaudy strip of resort concessions known as the "Miracle Mile". Sprawling amusement parks and hot-pink motels litter the roadside like rusting Pabst Blue Ribbon cans, typical of many seaside locations. But Panama City has at least one unique feature — the most varied wreck diving in the state.

Heading out of Treasure Isle Marina aboard the *Afternoon Delight*, Captain Danny Grizzard explained the importance of the wrecks to local folks.

"We get a lot of tourists through here from Tennessee, Georgia and Alabama and a lot of them are saltwater fishermen. Most of the Gulf is just flat, sandy bottom or low sandstone reefs. Nothing there to hold fish, so they tend to live around the man-made things. Wrecks like the *Tarpon* and the *Simpson*."

Heavy commercial and sport fishing have kept down the fish population on the natural wrecks. Grizzard, who is Operations Director for the Panama City Marine Institute, is an important part of the local effort to construct artificial reefs. The Institute, along with the Environmental Protection Agency and the Florida Department of Natural Resources, is involved in an intensive reef-building project. The by-product for divers is some of the finest sight-seeing in the Gulf.

From the dock at Treasure Isle a two-hour boat ride can put you on a 360-foot Liberty ship, a submerged Navy T-33 jet trainer or one of several tugs.



The *Liberty Ship* (top) is just one of the area's artificial reefs. Stage I (above) is a Navy-maintained marine research platform.

There are 18 known wreck locations in the immediate area as well as a number of reefs, the remains of Sealab I, assorted artificial reef structures and two government laboratory platforms.

The first dive Saturday was at Stage I, a lab platform maintained by the Navy. Although the area is usually closed to divers, we were able to obtain permission to visit the tower through the Environmental Protection Agency. The spindly legs of the structure extend 107 feet to the sand bottom. Among the maze of downtubes and crossmembers swam a coterie of Gulf marine life: Jacks, barracuda and enormous angelfish, all very bold, apparently conscious of the preserve status accorded the tower. A slight current swept the surface, causing the mysterious sensor packages to sway at the end of their umbilicals. Looking up, row after row of triangles faded into the blue-green distance, converging near the far limit of sight.

Water visibility around Panama City is variable. Although the average hits somewhere in the 20- to 50-foot range, it can be 100 feet on good days and extremely limited on others. Close contact with the local dive stores and an eye on the weather will help avoid wasted weekends. Of 18 weekends scheduled between late May and early September, the *Afternoon Delight* lost only 3 to weather. Not bad for the hurricane season.

Tracking the tropical depressions that occasionally stir up the Gulf may inconvenience the inland diver, but paying attention to weather patterns and

Kathy Bentley



arriving in Panama City during one of the spells of flat calm is reward enough for the trouble.

From Atlanta, Birmingham or New Orleans, Panama City is about six hours by road; a healthy drive but still ten to twelve hours short of the Keys. Panama City is *not* John Pennekamp State Park or Looe Key. No six-foot reefs, no unlimited visibility, no elkhorn coral. Tropics-only divers blanch if they can't see the bottom from the boat, hesitating a little before they roll over the side and head down the anchor line.

At Stage I, a Navy-maintained research platform, Guy and Linda Beard swim in a cloud of tiny silver minnows. The minnows and many larger species, grouper, angels and jack, are present in huge numbers on the platform.

What's down there is very different from the coral gardens of the Caribbean. It's a little bit deeper, a little bit darker. And it's a wreck diver's paradise. Totally intact vessels that provoke memories of a wild night at sea — disaster, a warning shout, a scramble for the life boats.

That's how it happened on the *Tarpon*, a freighter that went down during a hurricane in 1937. With a load of empty beer bottles and plate glass she was headed for Panama City, into the face of steadily rising winds, her barometer plunging ever lower. The



Steve Blount

frightened crew begged the captain, a notorious blowhard, to run for the beach. Determined no mere hurricane would interrupt his schedule, the captain refused. Eighteen men paid with their lives. The *Tarpon* foundered in 90 feet of water. Today she lies broken amidships near a low sandstone reef, her cargo scattered across the bottom. Two of the boilers are still upright, protruding from a pile of gears, valves and pipes; part of the forgotten machinery that transformed steam into motion. The modern sailors that pass

Linda Redmond examines shells recovered near the Tarpon (above right). Large spiny oyster and Lion's Paw are very common on the wrecks and reefs of the Northeastern Gulf.

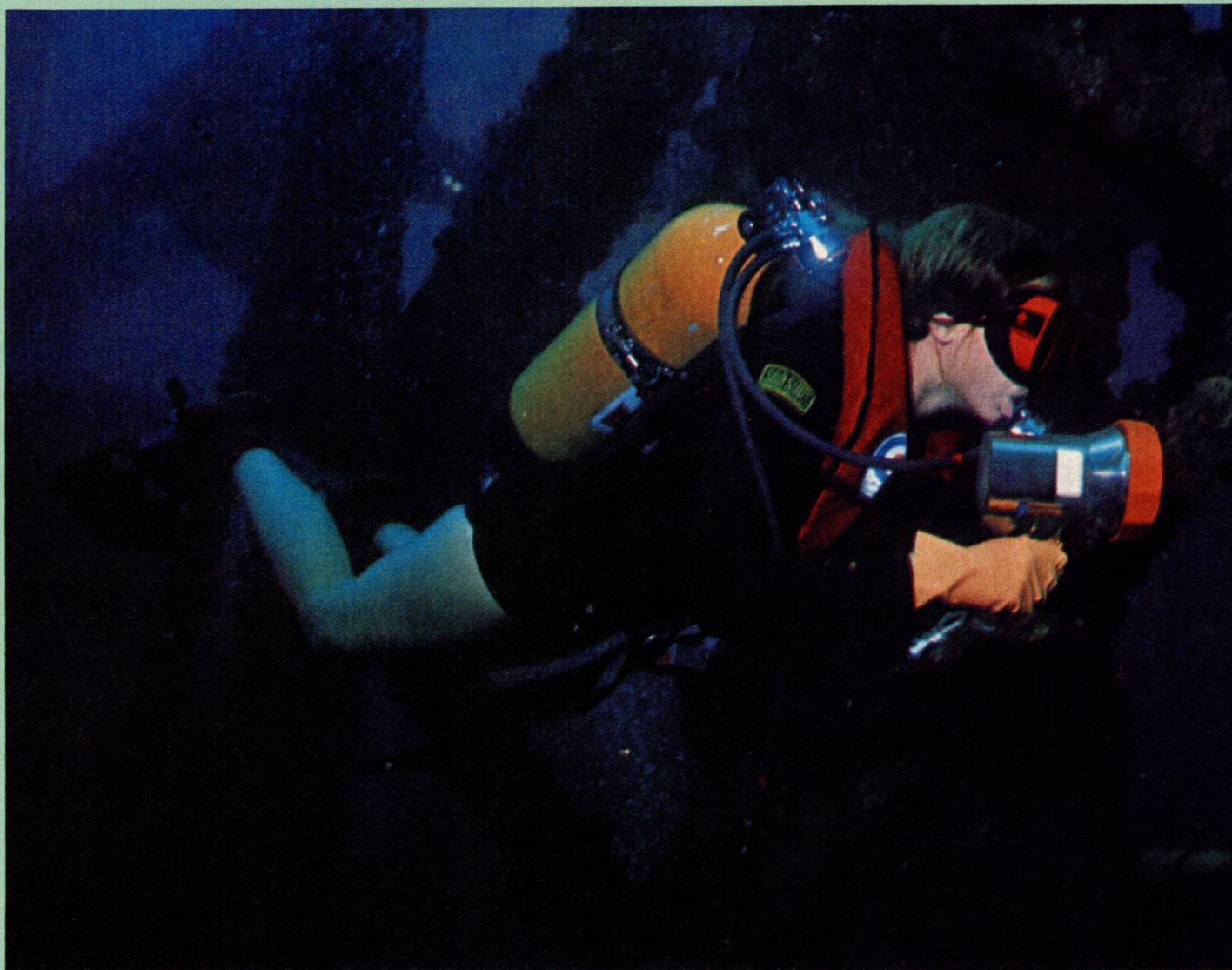
over the *Tarpon* probably wouldn't know what half that stuff is — but odds are they still get a little scared in a stiff blow.

The story of the *Grey Ghost* is quite different. After a long and productive life afloat, the 105-foot tug was purchased by the Marine Institute. With help of a federal grant the Institute hired unemployed youths, remanded from the juvenile court system, to strip the vessel. Everything was removed except the engine block, and the *Grey Ghost's* last voyage ended 10 miles offshore, scuttled to provide a haven for marine life.

The tug is heeled over on her starboard side, her high-railed companionways now long tunnels that run the length of the ship. The glass and doors of the wheelhouse have been removed, affording easy and safe access. Inside, a thin film of growth covers the steel surfaces, producing clouds of silt when bumped or scraped carelessly with an errant fin.

The massive engine block that once powered the *Grey Ghost* broke loose from their mounts during the sinking and have shifted forward. There's just enough room to squeeze under the exhaust ports.

The U.S. Navy has also been involved in the deliberate sinkings. Aside from providing surplus vessels and support, they have added two of the more interesting items to Panama City's manifest. The first government-sponsored underwater habitat, Sealab I, is a short ride from the dock. Better still, last year the Navy submerged a T-33 jet training aircraft near Stage II, the second research platform. A diver or divers apparently discovered the plane



at a depth of 70 feet, then returned at night with a boat and drug the craft away.

The Navy, quite upset, spent many thousands of dollars searching for the small plane. After a reward was offered through the local dive stores for information, an anonymous letter turned up plotting the new location. Sure enough, the trainer was right where the letter said it would be, less than two miles from its original location. It was resting neatly on the bottom as though it had made a perfect landing underwater.

The Navy attempted to drag the jet back to the test site but the landing gear fouled the bottom and the plane flipped. It now lies belly up, half buried in the sand.

Another reef project, this one sponsored by the Florida Department of Natural Resources, culminated in the sinking of a Liberty ship in September of 1977. The football-field-sized hull is now the playground of sea turtles, grouper, jacks and divers. The ship has just this



Linda Beard examines the growth on Stage I (top). Many large angels inhabit the Tarpon (above). The ship's cargo of empty beer bottles is strewn across the bottom, and hundreds are recovered by divers each year.

summer put on its full coat of encrustation, a furry-looking growth that covers the bare metal. Thousands of silver minnows race the length of the deck, parting to maneuver through the bulkheads and around divers. Their bodies form a solid screen, flashing black and silver as they turn. They obscure the wreck, the sun, even the beam of a handlight, yet they never come closer than three or four inches — a solid cloud that cannot be touched. It's like standing under a waterfall and not getting wet, the droplets deflected by some inner sense of direction.

Wrecks and their history dominate the atmosphere of Panama City, so a local entrepreneur built a multi-million dollar restaurant in the shape of a Spanish galleon. Four stories high, it towers over the Treasure Isle Marina, a wooden monument to the area's seafaring legacy. The top decks are cocktail lounges and the full length windows in the main dining room overlook the ocean. Unfortunately the food delivered to the table was less

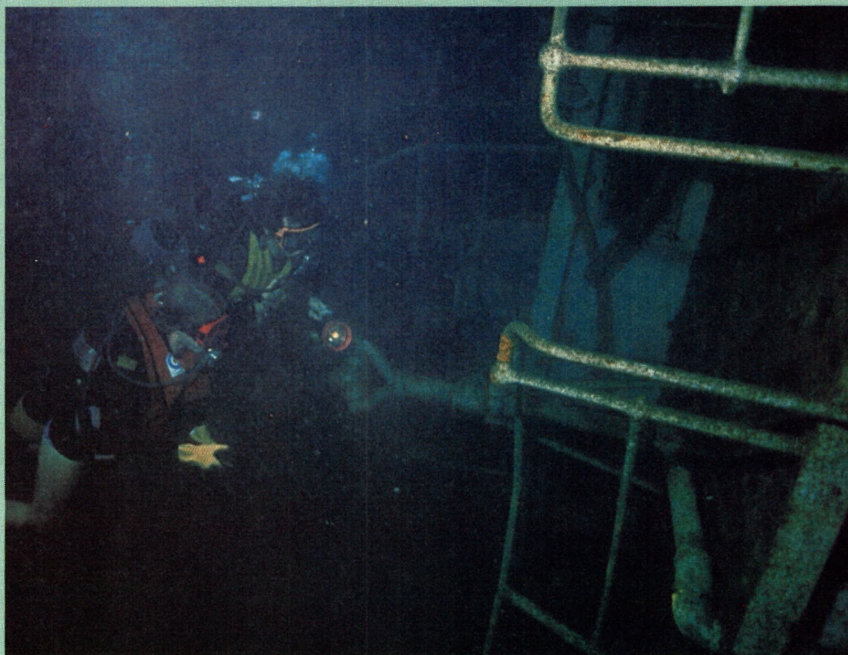


appetizing than the general impression of luxury had promised. Moral: Go to the Quarterdeck Lounge for drinks after you've eaten in one of the many fine seafood restaurants in town. Strolling the poop with a rum grog after a full day of wreck diving will undoubtedly turn your thoughts towards the men who sailed those unlucky vessels offshore. The illusion of looking out from the topmast, searching the horizon for lost companions is quite real. Of course a real galleon would be dwarfed beside this oversized commemorative, but then legends, like good friends, always seem to grow in the remembering. 🐚

Bay Divers Supply / 4400 W. Hwy. 98 / Panama City, FL 32401

C and G Sporting Goods / 137 Harrison Ave. / Panama City, FL 32401

The Diver's Den / 4700 E. Hwy. 98 Parker / Panama City, FL 32401



The Grey Ghost (top) is a 105-foot tug sunk by the Panama City Marine Institute. Operations Director Danny Grizzard (with beard, photo above right) and Captain Philip Adams (far left, above) check regularly to document the progress of attaching organisms and fish life.



Steve Blount

Hydrospace International / 3605 Thomas Dr. / Panama City Beach, FL 32407

Pro Divers Shop / 1218 Beck Ave. / Panama City, FL 32401

SCUBA Panama City / Dive Trips-Training-Travel / P.O. Box 4732 / Panama City, FL 32401

Charterboat *Afternoon Delight* / Capt. Danny Grizzard / 3910 Upas / Panama City Beach, FL 32407

Charterboat *ToyBoat* / Capt. Jack McDougall / 714 Clarence Ln. / Panama City, FL 32401

Charterboat *Kelly Lynn* / Capt. Jerry McLendon / 316 Cherry St. / Panama City, FL 32401

Charterboat *Duchess* / Capt. John Hardy / 6500 S. Lagoon Dr. / Panama City Beach, FL 32407

IS THERE A PLACE FOR EXCELLENCE IN THE DIVING INDUSTRY?

We think so. This ad is directed to those people who agree with us.

NASDS has an urgent need for professional full-time scuba instructors trained by our Instructor College. Over 300 diving retail store/schools are members of NASDS.

Our Instructor College offers a full 10 week program to train you. It is a demanding course. It is also considered the leading program offered by any instructional college in the sport diving industry. Only our program teaches a fully integrated course to turn out true professionals.

It is against the law for us to promise a job to you, but we will be glad to send a list of our members along with their phone numbers.

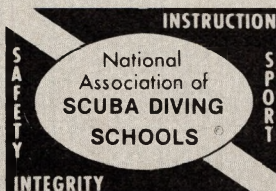
Contact our members and ask them if they would hire a NASDS Instructor College graduate. If that isn't convincing enough, we can send a list of graduates from our Instructor College to you. Many operate their own diving retail stores or manage diving resorts, others are full-time professional instructors.

The cost for attending the NASDS Instructor College is \$1,695.00 plus books.

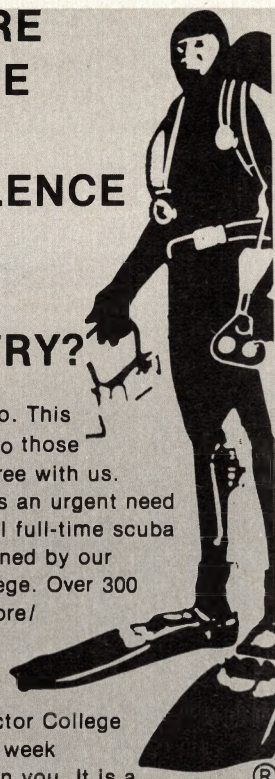
Please include your phone number and area code on any correspondence.

If you seek further information, write:

**NASDS EDUCATIONAL DIVISION
SAN DIEGO DIVERS SUPPLY
DIVING INSTRUCTOR COLLEGE
4004 SPORTS ARENA BLVD.
SAN DIEGO, CA 92110**



State approval for V.A.
Students Voc. Rehabilitation
State and V.A.



Instructor Notes

Teaching Your Child To Dive by Julio Travieso

Diving, like most adult behavior, is largely influenced by our experiences as a youngster.

If you are a diver and the parent of a young child, aged 3 to 11, you are probably anxious for the day when your son or daughter can go diving with you. While scuba lessons are best left in the hands of a certified instructor, there is much you, as a parent, can do to introduce your child to the underwater world.

At any given age different children will respond differently to the water. Adjustments have to be made and the pace modified to handle the individual needs of your youngster. Don't push your child to do something he is not emotionally or physically ready to do.

Also, common sense and care must always be exercised. Combining water with children presents a dangerous situation, as thousands of drowning deaths sadly confirm each year. You or another able adult must be present any time a child is in or near the water.

Swimming lessons are readily available for three-year-old children from national organizations such as the

An able adult must be present any time a child is in the water.

American Red Cross and the YMCA, and it will be assumed in this article that your child is at least 3 years old and has acquired some degree of swimming ability.

Teaching Tips

How successful you will be in introducing your child to the water will largely depend on your teaching ability and technique. Here are a few teaching tips:

Be Patient: It may be years before your young son/daughter can even go snorkeling with you, so don't rush him. Don't become frustrated if your child's progress is slow or he lacks concentration. It could take months to master some water skills. The interest span of a child is very short, so keep your teaching periods brief.

If the child is not in a receptive mood, wait until another day and try again.

Make It Fun: Children love to play games but, generally, they are not so fond of schooling. Your teaching needs to be subtle. Make it appear to be a game. Try to think like a child.

Encourage Often: Positive reinforcement is extremely valuable. Even if your child is only partially successful, congratulate him warmly. It takes courage to do things for the first time, so give your youngster a lot of credit.

Lay Out Rules: Above all, make it clear to your child he is not to go into the water alone. Point out the dangers of such acts as diving into the water with a face mask on, trying to hold his breath too long, and going too deep before learning to equalize his ear pressure. Stress safety.

Watch the Temperature: Keep an eye on the water and your child's body



temperature. At the first sign of coldness or shivering, end the session. Keep a dry towel and a change of clothing handy.

Avoid Comparing Youngsters: If you have more than one child, be careful about comparing their progress. It's common that one child will do better in the water than his brother or sister at the same age level, and it can be very discouraging for the slow developer to hear his parent say that.

PHOTOS BY RICHARD H. STEWART



Practice Makes Perfect: The more the child practices, the better he'll become. Some elementary skills, such as an introduction to the face mask, can be held in the bathtub. Make sure your child has mastered each skill before going on to the next one.

Equipment

Take the same time and care in purchasing your child's snorkeling equipment as you would in buying your

own. Take your youngster to a dive store, let him look around, and ask for assistance from a sales person. Make your child feel important, this is their day.

Try to avoid the ill-fitting, inexpensive equipment found in drug stores, discount stores, and other shops not generally dealing in diving equipment. If you are not able to obtain equipment that properly fits your child, ask your dive store to order some for you.

I've found that Cressi-Sub, an Italian firm with U.S. distributors, has a very extensive line of children's diving equipment. Through my neighborhood dive store, I bought my 4-year-old boy a double-seal, tempered-glass mask and full-foot fins which fit him well.

If the fins are slightly loose, the youngster can wear a pair or two of socks with them for a better fit. He'll grow into the fins rapidly enough.

When And Where To Begin

Three to Seven Years: After your child has his own snorkeling equipment, begin diving lessons in the pool. Instruct

Keep all exercises well within the child's physical limitations.

your child on how the face mask should fit. Explain that he has to breathe through his mouth. Ask him to look underwater and check for leaks. Let him enjoy playing with his new toy.

Ask him to take a deep breath and retrieve small objects for you from a depth of one or two feet. Using the steps of the pool, increase in small increments the depth to which he can descend.

When the child is familiar with the mask, introduce him to his fins. Swimming on the surface, demonstrate the forward crawl. Ask him to try it while you are in the pool. Some sessions later, when he has mastered this stroke, you can introduce him to the backward crawl.

Slowly make the transition from swimming on the surface to swimming underwater with mask and fins. Keep all exercises well within the youngster's physical limits. The child should not descend more than a couple of feet over his height.

Don't be too concerned about form at this early stage. The main objectives are that the youngster enjoys himself in the water, begins to feel comfortable with his new equipment, and gains confidence in his ability to deal with the aquatic environment.

continued on next page

IS THERE A DIFFERENCE IN DEEP SEA DIVING SCHOOLS?



You bet your life!

So you're thinking hard about becoming a commercial diver, and you know you need training. You've seen a lot of ads, and you're trying to decide which school to go to.

We've been in the business for more than 29 years, so we can give you some solid advice.

First, make sure your instructors are **seasoned** professionals in **commercial** and **industrial** diving. The only ones who can teach you what you really **need** to know are the men who've "been there." Your future depends on their experience.

Next, don't settle for easy simulations. Get your training under "on-the-job" conditions — in murky water, with real cross-currents tugging at you.

Finally, make sure your course is **practical** — plenty of hands-on work with all the latest equipment (we train with over 20 kinds of helmets and masks).

Our course is the most advanced — and the most **practical** — you'll find anywhere. We've trained more men, and produced more internationally successful working divers than any other organization in the world. Don't take our word for it — compare and see!

11½ weeks for \$1295 — the lowest in the industry. Avoid imitators. No other school is a branch or affiliate.

VA Approved — Pay As You Go Plan

FINANCIAL AID AVAILABLE

U.S. GOVERNMENT
Project Transition program, Dept.
of Defense, Manpower Develop-
ment Training Act, Dept. of HEW,
Survivor Benefit Training, Veteran
Vocational Training Grants,
(offered by individual states)
STATE OF CALIFORNIA
Veteran Training, approval by Supt.
of Public Instruction, Rehabilita-
tion Training Program

Get the full story. Send \$2.00 for a copy
of "Your Future in Deep Sea Diving."
No obligation.



**THE COASTAL SCHOOL
OF DEEP SEA DIVING**

320 29th Avenue, Oakland, CA. 94601



Instructor Notes

continued from previous page

Seven to Eleven Years: Assuming your child is doing well in the pool, you can begin to introduce him to open water situations.

Start in shallow water areas two to three feet deep where the child can easily stand up. Look for areas with acceptable visibility, minimum current and some aquatic life, and point out obvious dangers such as sea urchins, stinging coral and jellyfish.

Back in the pool you can show your child how to use a snorkel. *Make sure the diameter of the snorkel is not too large.* At the beginning, use of the snorkel may be limited to an aid in surface swimming. Initially, the youngster may lack the lung strength necessary to blow all the water out of a snorkel, but as he becomes older and stronger, he should be able to handle this skill.

You may want to teach the displacement method as an alternative way to clear the snorkel, but this can be a difficult technique even for some adults.

Buy and instruct your child in the basic use of a life vest or buoyancy compensator.

After your youngster can swim 100 to 200 yards in the pool with mask, fins, snorkel and life vest, you can take him on more challenging open water trips.



Choose a day when the visibility and weather conditions are ideal. Take a boat with a diving platform and another adult aboard. Put a couple of puffs of air into your child's life vest and take him to an area six to ten feet deep. Anchor the boat and let out a line tied to an inner tube or small raft so that the line crosses the snorkeling area. Staying close to the line, snorkel with your youngster over the chosen area pointing out the different types of aquatic life.

If you are diving over a shallow reef, a waterproof book can be very useful for fish and coral identification and to increase your child's interest. You may want to make a game of identifying the fish or corals. When you return to the boat, go over some of the things you saw and explain the delicate ecological system of your area.

If you have taught the basic skills slowly and carefully, that first open water snorkeling trip will be something your child will always treasure. You will know you have done your job well if your youngster soon asks you to take him diving again.

Before long your child will be 12 years old, and he can enroll in a junior scuba instruction program; after that, he should be the best "dive buddy" you'll ever have!



After your child learns to snorkle, the next step is to enroll him or her in a junior scuba course. Although certification won't be issued until your child is a teenager, early practice can put them years ahead in skills and safety training.

The more you know --- the better you feel



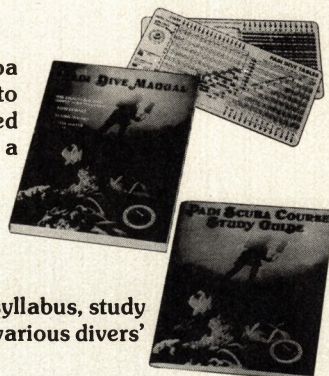
Feel better about your diving with information from **PADI PUBLICATIONS**

☐ **PADI TEXTBOOK AND DIVE TABLES**

A practical textbook on the how-to's of scuba diving. Contains only the essentials of learning to dive. Every page illustrated. Includes simplified plastic dive tables. Excellent for beginner or a refresher for experienced divers.

Textbook & Tables — \$9.95

Dive tables only — \$4.95

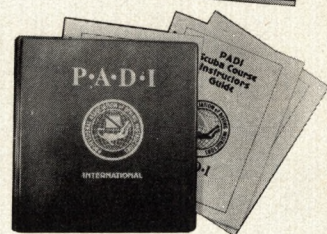


☐ **STUDY GUIDE FOR PADI TEXTBOOK**

Coordinated with textbook. Contains training syllabus, study questions, record of training, requirements for various divers' ratings, and repetitive dive tables. \$3.95

☐ **PADI INSTRUCTOR TRAINING MANUAL**

The most progressive diver training programs available are detailed. Includes PADI Standards & Procedures Manual, Scuba Course Instructor's Guide, and Open Water Training Manual. Complete with hardback 3-ring binder. 260 pages, 8½ × 11. \$24.95



BUY FROM YOUR LOCAL PADI TRAINING FACILITY

THE UNDERSEA JOURNAL

A professional, colorful technical publication devoted to underwater education. Published bi-monthly and featuring articles on instruction, advanced and specialty diving techniques, legislation, standards, and more. One year subscription, 5 issues. \$12.00

Available from PADI Headquarters.



☐ **THE EDIBLE SEA (Hardback)**

How to identify, catch, and cook it. 250 recipes, color photos, illustrated, 280 pages, 7 × 10. \$14.95

☐ **DISCOVER THE UNDERWATER WORLD**

Diving text and reference book. Color photos, illustrated, 140 pages, 7½ × 10½. \$5.50

☐ **DIVING LOG & TRAINING RECORD**

Log 50 dives. Plastic cover free with both books. Log Book, 36 pages, \$2.00. Training Record, 28 pages, \$2.00.

☐ **THE DIVEMASTER MANUAL**

All aspects of group control and emergencies. Illustrated, 64 pages, 6 × 9. \$5.00.

☐ **UNDERWATER NAVIGATION**

A complete guide. Basic fundamentals. Illustrated, 5½ × 8½. \$3.95.

☐ **SPORT DIVING A TO Z**

Advanced techniques and information. For those who know how to dive. Illustrated, 176 pages, 6 × 9. \$4.95.

☐ **WHAT'S YOUR SCUBA IQ?**

A compilation of exams from Skin Diver magazine. Answers included, 80 pages, 8½ × 11. \$3.95.

☐ **FIRST AID FOR SKIN & SCUBA DIVERS**

Illustrated, 66 pages, 4 × 6. \$3.95.

☐ **WOMEN IN DIVING SEMINAR PROCEEDINGS**

This may change your ideas about women as fellow divers. 96 pages, 8½ × 11. \$4.95.

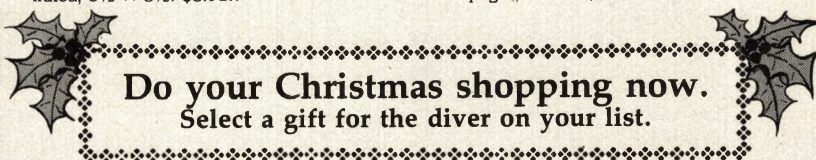
☐ **NIGHT DIVING**

Covers equipment, location, procedures. 48 pages, 6 × 9. \$3.00.

Purchase these books from your local PADI Training Facility. If out of stock, you may order direct from PADI Headquarters. Make check or money order payable to PADI. California residents add 6% sales tax.

PADI

2064 N. Bush St.
Santa Ana, CA 92706



Do your Christmas shopping now.
Select a gift for the diver on your list.

PADI TODAY'S LEADER IN DIVER EDUCATION

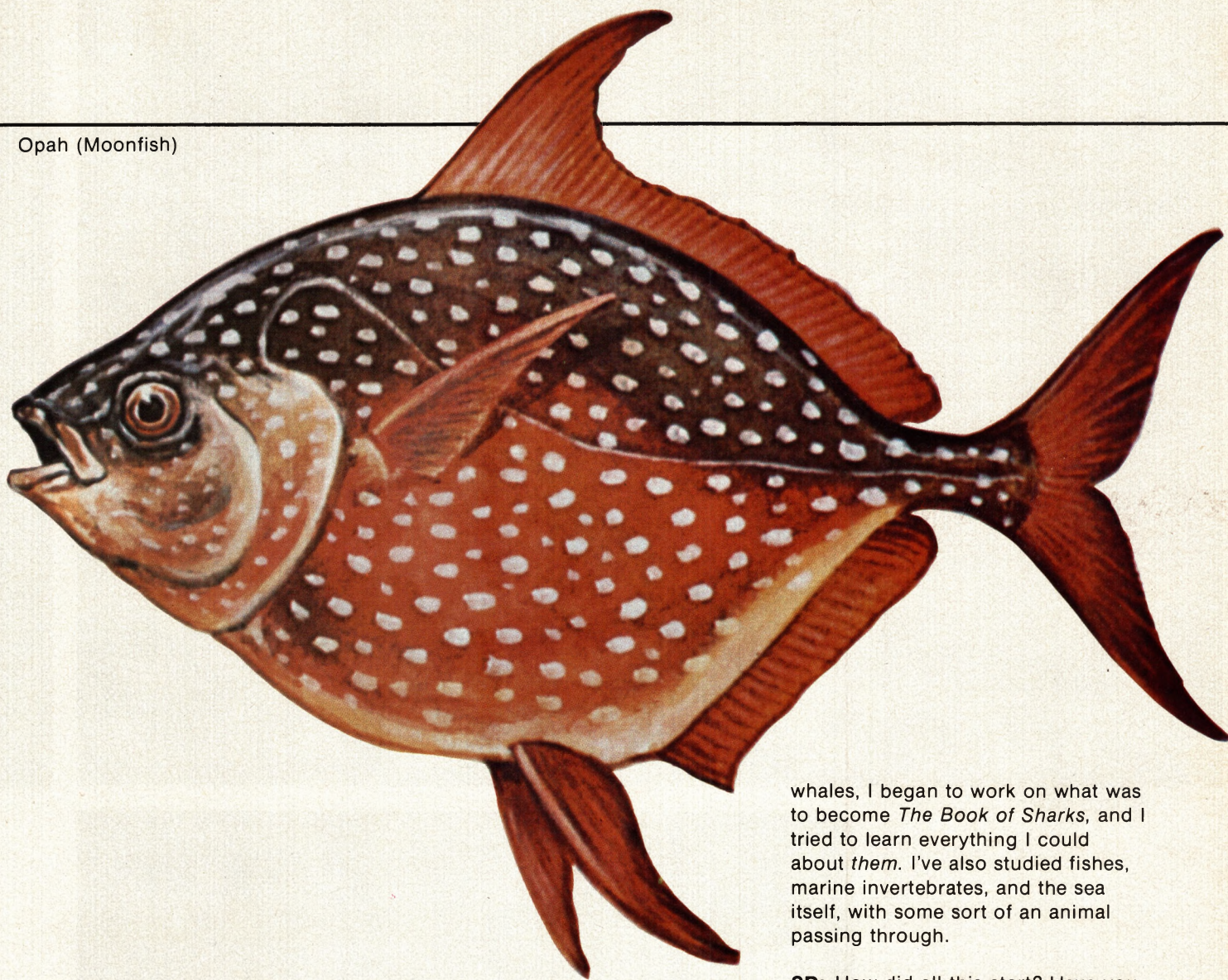
PORTFOLIO Part 2

RICHARD ELLIS

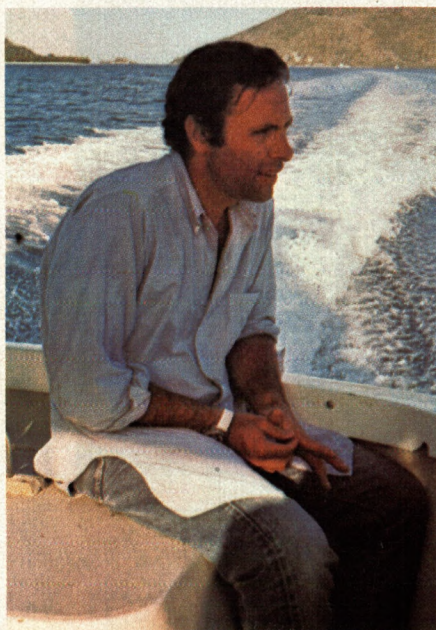
Queen Triggerfish



Opah (Moonfish)



AN INTERVIEW WITH RICHARD ELLIS



T. A. Ellis

SD: Do you paint or write on subjects other than the sea?

RE: Occasionally I paint a bird or a land mammal — just to prove to myself that I can — but for the most part, I stay under the water.

SD: Do you have a favorite subject?

RE: Not really. I get really interested in whatever I happen to be working on at the moment, since I usually choose my own subjects. For instance, when I began to paint the whales that eventually appeared in *Audobon* magazine, I learned all I could about the physical appearance of whales. I still have far to go on that subject; the great whales are perhaps the most difficult animals in the world to paint, since they change so much when they're out of the water, and it isn't easy to see them under water. When I had completed these paintings, I had never seen a living whale. After the *Audobon*

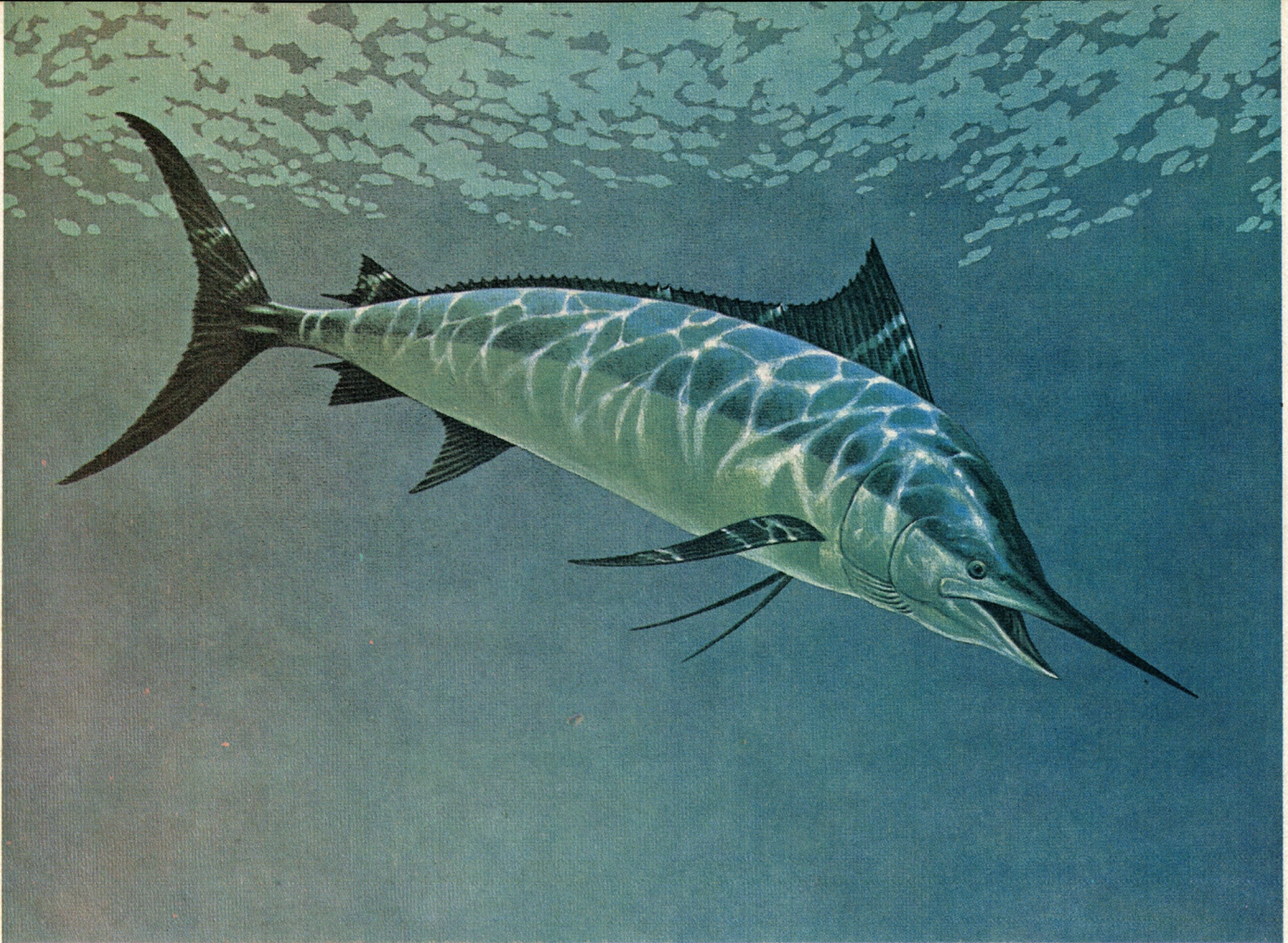
whales, I began to work on what was to become *The Book of Sharks*, and I tried to learn everything I could about *them*. I've also studied fishes, marine invertebrates, and the sea itself, with some sort of an animal passing through.

SD: How did all this start? Have you always been oriented towards the sea?

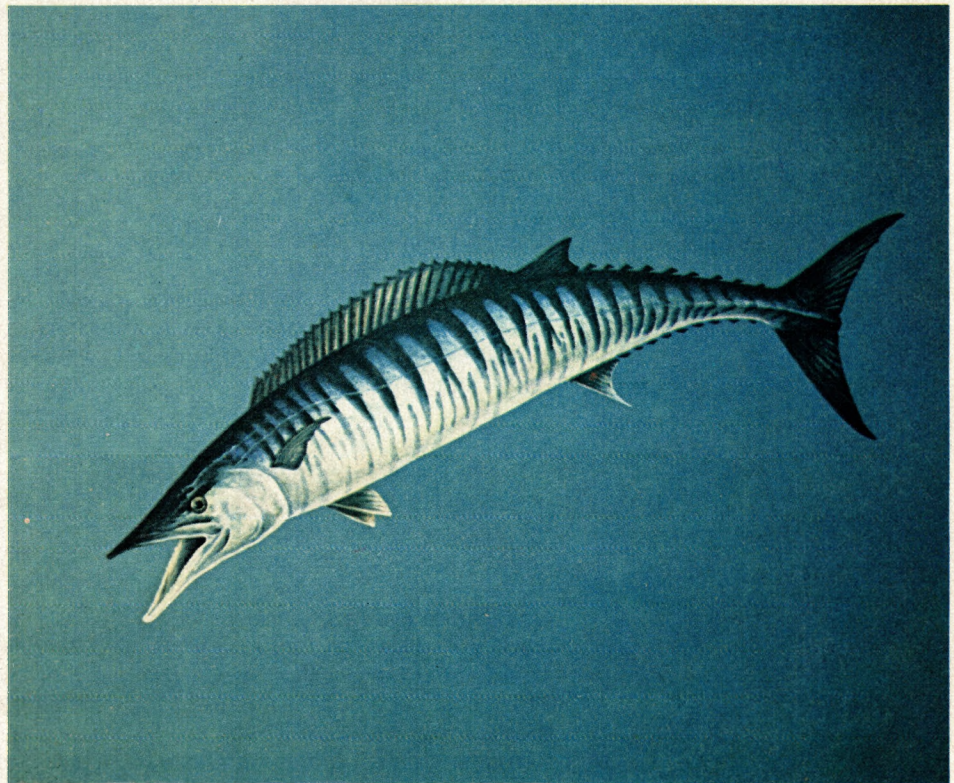
RE: In a way, yes. I grew up on Long Island, and I spent all the time I could on the beach. I have always liked animals, and I always drew the things I liked, so it seems natural that I became an animal painter.

SD: Do you now consider yourself an animal painter?

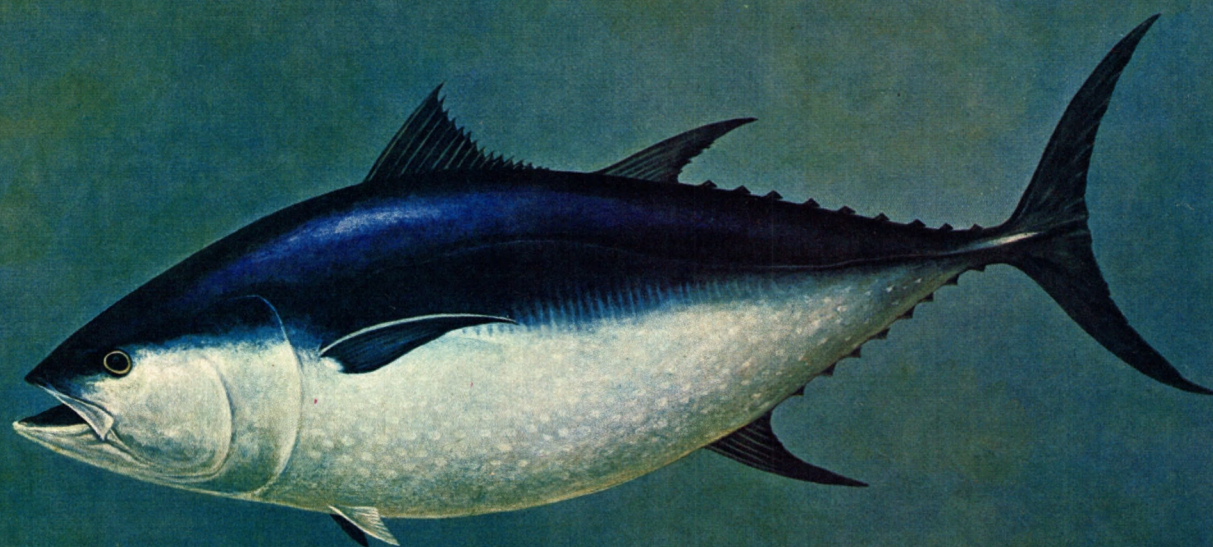
RE: Not any more. There was a period when I only wanted to paint animals, but when I began to study various kinds in depth, I realized there were many other ways to communicate. I found that I was writing magazine articles, giving lectures, and even writing books . . . I really don't know how to describe myself. It all depends on what I'm doing. If I'm working on a book and someone asks me what I do, I am apt to say I'm a writer. If I'm working on some sort of illustrations, I say I'm



Striped Marlin



Wahoo



RICHARD ELLIS '73

Bluefin Tuna

an illustrator, and when I was working on a sperm whale mural for a museum in Buffalo, I said I was a muralist. I suppose I might be called a marine natural historian who draws.

SD: But you came into this field as a painter, correct?

RE: Actually, my first job was as an exhibit designer for the Academy of Natural Sciences in Philadelphia. I did design, research, copywriting, carpentry, and of course, illustration. I then left to work for an oceanarium where I did exhibits and graphics, and then I came to New York, to work in the exhibition department of the American Museum of Natural History. I designed the Hall of the Biology of Fishes, and it was then that I worked closely with the Department of Ichthyology and really began to learn about marine life.

SD: Then what?

RE: After a while I began to think of myself as a painter again, since I was doing so many illustrations for the exhibits.

This interview with Richard Ellis will continue in the next issue of Sport Diver.

Richard Ellis prints are available from:
Sportsman's Edge, Ltd.
136 E. 74th Street
New York, NY 10021

In the last issue, the painting of the bull shark on page 100 was incorrectly identified as a blue shark.

A NEW LANGUAGE FOR DIVERS

by Phil Trupp

Gallaudet College students bring new communication skills to diving.

It's happened to everyone. You're a fish nut, your buddy's into lobster hunting. Midway through the dive a purple-filched Abercrombie swims by. Excited, you want to chase down and photograph it. Your buddy wants to keep on hunting for lobster. He's never heard of an Abercrombie and has no idea how rare they are. You desperately signal, "Swim that way!", but he just doesn't understand your excitement. The Abercrombie gets away, and you're thinking of trading your Nikonos for a wetphone.

What you need is a way to take your vocabulary underwater. Well, now that's possible — without electronic gadgets — and it can make diving easier, safer and a lot more fun.

Underwater we're all essentially silent, but we're on the verge of an important communications breakthrough thanks to a basic NAUI scuba course being taught at Gallaudet College in Washington, D.C., the nation's only liberal arts college for the deaf.

John Feaser



While it may seem ironic that these deaf students easily bridge the communications gap, it must be understood that, unlike divers with normal hearing, they possess a singular advantage on the bottom. That advantage is a universally understood non-oral language.

Hearing divers know a few basic hand signals which have been around since 1972. The signals are okay, but they represent only about 50 words. The English language contains over a million.

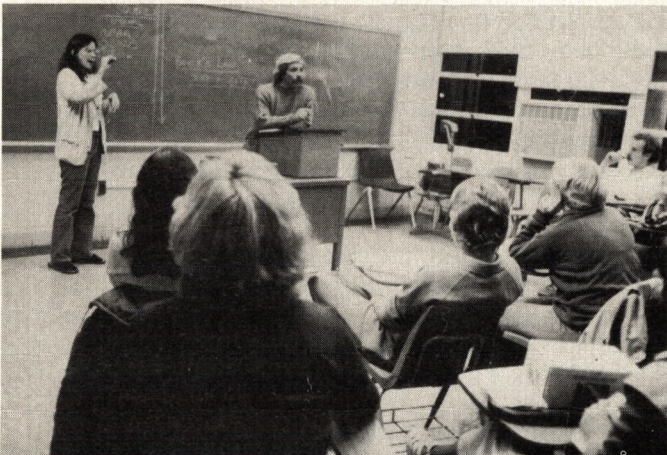
The deaf possess the ability to sign what amounts to a full vocabulary. They do this through American Sign Language (Ameslan) and a complete finger-signed alphabet. When used in combination, they convey an infinite variety of specific thoughts and concepts. The deaf diver can in effect "speak" underwater with the fluency hearing divers have on land.

The first time I visited the course at Gallaudet, I was amazed. Using the scuba hand signals I was able to communicate on only the

SCUBA SIGNALS			
1. TIRED	5. PAIN	9. READY TO GO	
2. NOT WORKING	6. MINUTES LEFT	10. HURRY	
3. WAIT HERE	7. DIZZY	11. DANGER	
4. STOP AND REST	8. HELP		
			
2. NOT	WORKING	3. WAIT	HERE
			
4. STOP	AND	REST	5. PAIN
			
8. MINUTES	LEFT	7. DIZZY	8. HELP
			
1. READY	TO GO	HURRY	11. DANGER



Ken Heist



Howard Caulk

In the classroom at Gallaudet College (above), Bob Landers lectures deaf students on scuba techniques with the help of interpreter Anita Marchitelli. Most of Landers' and Hamill's students are checked out at a quarry in Myerstown, Pennsylvania (top and opposite page). As Landers improves his fluency in Ameslan, he hopes to teach without an interpreter.

most elementary level. But the students, all deaf, were able to carry on elaborate conversations. To see them in the pool gossiping and joking gave me more than a touch of inferiority.

"Underwater the deaf have all the advantages," says Bob Landers, who heads the 14-week course at Gallaudet.

Landers, an active instructor and President of NAUI's Nation's Capitol Chapter, says Ameslan can convey very precise time and space relationships. For example: "Our group will explore the bow and top of the wreck. Your group should look over the sides and stern section and meet us back here in 15 minutes." Try saying that with the basic hand signals.

Diving would be a lot more fun if all of us were capable of such thorough underwater communications. It would be nice to dive the Cayman wall with a buddy capable of expressing his or her impressions of the drop-off or telling you about some detail of underwater geography.

This possibility is what excited Landers, who at first was reluctant to begin the scuba program.

"At first I didn't want to do it," Landers says. "A group of Gallaudet students came to me with an interpreter during one of my classes and asked



Let's



go



boat



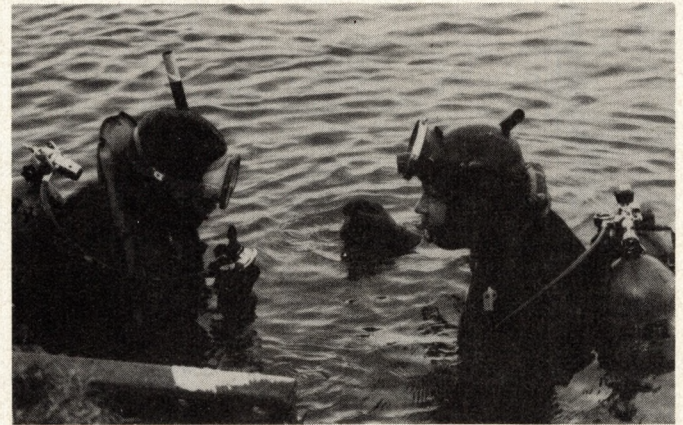
five



minutes.

Steve Blount

Using Ameslan, divers can sign practically a full vocabulary. And the signals are universal so there should be no confusion as to meaning. The sequence above demonstrates a simple message: "Let's go to the boat in five minutes." More information on Ameslan can be obtained at your local library, through your local school system or directly from Gallaudet College.



Rebecca Woodward

if I'd take on the job. I thought: 'How am I going to teach scuba to deaf people?' I thought about the difficulties we'd face in the classroom."

Think back to your basic scuba course. Remember the lecture on how a regulator works? Lots of people just didn't get it the first time around. But insert into this learning experience the total absence of spoken language and you'll have some idea of the monumental task Landers was asked to perform.

At first it was rough going. But, says Jim Hamill, who also works in the Gallaudet course, "We're getting a lot better at it. We're learning a new language. If a point doesn't get across we realize it's our fault — we didn't communicate clearly."

The Gallaudet divers have no physical impairment beyond hearing loss. Most are strong swimmers with an equally strong desire to learn. To teach them effectively, Landers and Hamill knew they had to learn Ameslan, and both enrolled in a course given at Gallaudet. Through subsequent courses and a lot of trial and error, they've become passably fluent in Ameslan. They can discuss Boyle's Law, buoyancy and the major technical details a diver must know.

"We've come a long way since that first class in 1975," Landers says. "We still use interpreters but I want to be more direct. An interpreter is fine if there's no other choice, but it's not as good as a one-to-one relationship with the students."

Six years ago, Landers was involved with a NAUI committee which proposed standardized signals to be used by the major training associations. It was inevitable that he would see the possibilities of Ameslan for his hearing students.

"They have every thing to gain," Landers says. "After all, if we're going to make the buddy system work properly, an expanded vocabulary will help tremendously."

The limitations of our present signals are obvious:


They don't always work with new buddies, they are practically devoid of space and time relationships and the conceptual framework is one step from prehistoric. If you want to convey a complex message, you may have to surface.

There are buddy teams that, after a time, know each other well enough to communicate effectively with the basic signals and a few of their own invention. But split them up or put them in with strangers and the situation changes. Using Ameslan would inject standardization and virtual strangers may use it to communicate on a high and direct level.

Landers is working hard to develop assistant instructors from the Gallaudet community. He is confident that a full-fledged instructors' course can be taught in Ameslan. That may be, as Landers put it; a "far-ranging proposition," but it is by no means impossible.

"What's lacking," he explains, "is a way to sign all of the NAUI skill requirements."

At present Landers is working with Lance York, a Gallaudet student, who wishes to become an instructor. If he makes it, a precedent will be set and more deaf instructors will eventually join the diving community. An increasing population of deaf divers can only lead to more complete underwater communications and a tighter buddy system for us all.

The experience at Gallaudet had opened the minds of many hearing divers to the possibilities presented by the new language. The Atlantis Rangers, a 500-plus member diving organization to which Landers and Hamill belong, have invited the Gallaudet divers to share the club's extensive diving program. The Rangers, who are widely known for their wreck diving activities, will be sharing some very demanding dives with the "silent people". In return, the Rangers will have an unprecedented opportunity to learn first hand the most effective method for communicating in a silent world. 

JOIN THE LEADERS AT THE 6TH ANNUAL NASDS CHRISTMAS EGGNOG PARTY!

Meet at your professional NASDS schools and have a reunion with all of the great people you have met through diving. Bring your friends! Have a splash of eggnog. Enjoy the friendly cheer as we herald in the holiday season!

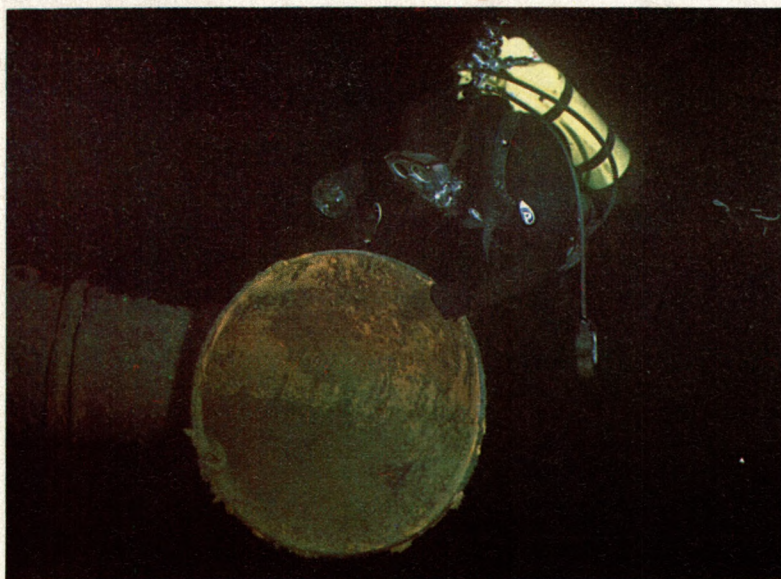
Remember, your NASDS store/school is Christmas-present headquarters for your diving friends and family!

NATIONAL ASSOCIATION OF SCUBA DIVING SCHOOLS, INC.
P.O. BOX 17067
LONG BEACH, CA 90807



Kamloops

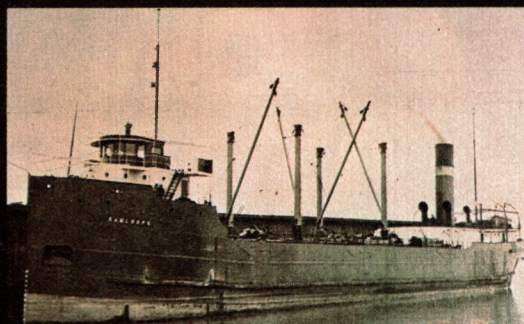
ghost wreck of Isle Royale



"I am the last one alive, freezing and starving to death on Isle Royale, signed Alice B----."

This note was found floating in a bottle off Agawa Bay in Lake Superior in 1928. The faded message was from the last survivor of the wreck of the *Kamloops*, a Canada Steamship Lines freighter which disappeared with all hands more than 50 years ago.

Alice Bettridge was the *Kamloops*' assistant steward. She wrote the message on December 7, 1927 at Todd Harbor, a small cove on the northwest shore of Isle Royale. Struggling against the raging elements, the note shows she knew what her fate would be.

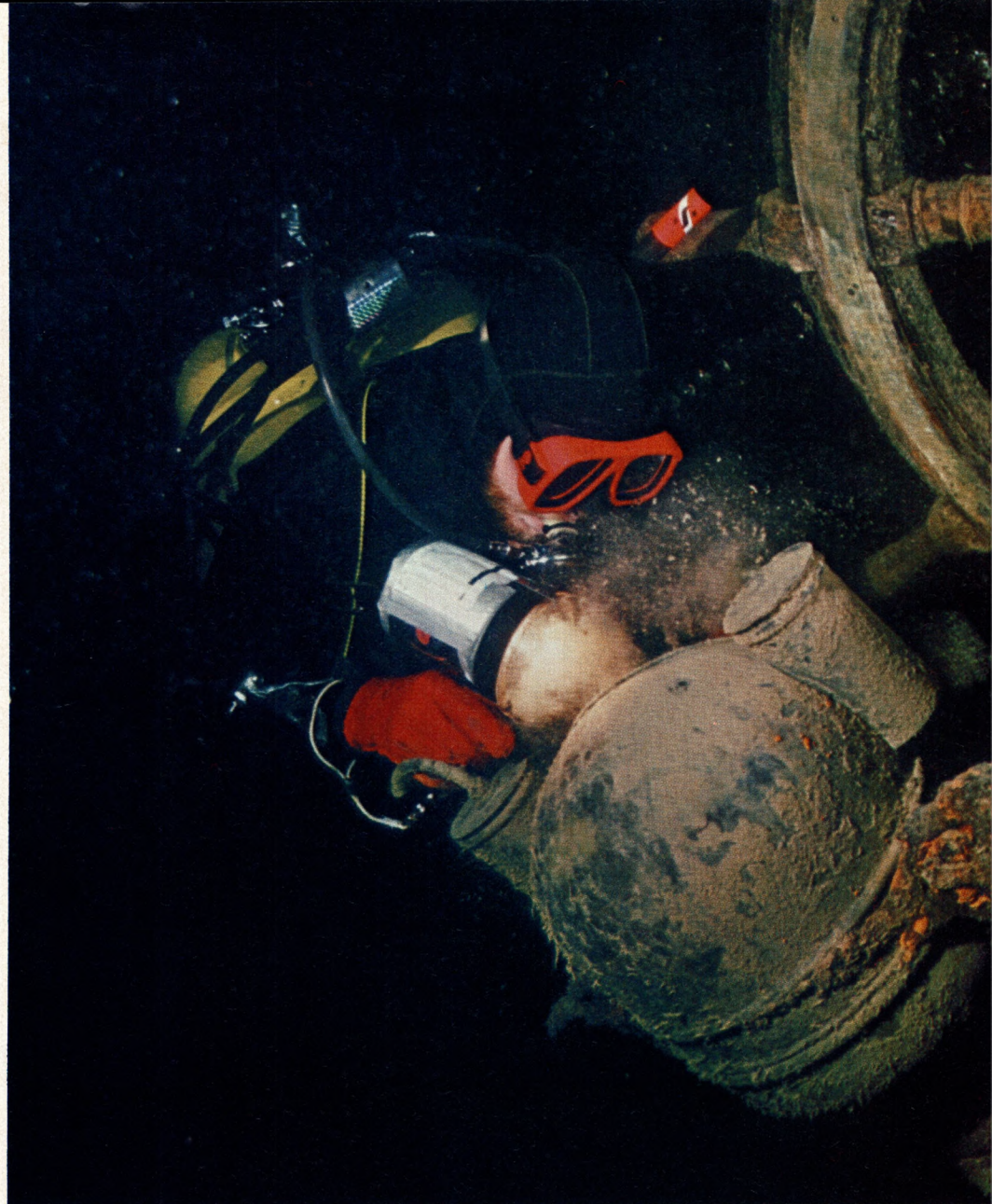


Story and Photography
by Ken Hafner
Editorial Research by
Thom Holder





(Preceding Page) Color radar scope shows the location of Kamloops off Twelve O'Clock Point. This photograph definitely identified the wreck. Note the letters "O-O-P-S". The compass was missing from the binnacle, it may have been stored in the Master's cabin (right).



One other person is known to have made shore alive. The First Mate, Henry Genest, commanded the only lifeboat to be successfully launched from the steamer before she rolled over less than a hundred yards from shore. Of the *Kamloops'* 20 crewmembers, only these two left any evidence of having even briefly survived what became one of Lake Superior's most mysterious shipwrecks.

There is nothing unusual about a ship sinking near Isle Royale. Isle Royale, in the

northwest corner of Lake Superior, is the largest freshwater island in the Western Hemisphere. Thirty-five miles due east of Thunder Bay, Ontario, in the main stream of commercial shipping lanes, the island's rocky, pincer-like shoreline and the lake's furious storms have often combined to make Isle Royale the last port of call for a stout vessel and her crew.

What has given the *Kamloops* her title, the Ghost Wreck, is the fact her wreck site remained unknown for 50 years.

The *Kamloops* is a 250-foot steel hulled canaller built in England in 1924 for the Canada Steamship Lines. She carried package freight between Montreal and the Canadian Lakehead at Port Arthur and Fort William (now called Thunder Bay).

On her last voyage the *Kamloops* had taken on a special cargo of imported paper-making machinery and various packaged freight at Montreal. Touching at several ports enroute to Lake Superior, *Kamloops*

picked up a load of fencing wire and water pipe. These were stowed on deck.

On December 4, 1927, Captain William Brian took the freighter through the upbound locks at Sault Ste. Marie. The lock crew warned him of severe weather ahead and the Captain steered the *Kamloops* to a safe anchorage in the shelter of Whitefish Bay. She swung on the hook with several other vessels for nearly two days, awaiting more reasonable weather.

A substantial break in the storm on December 6

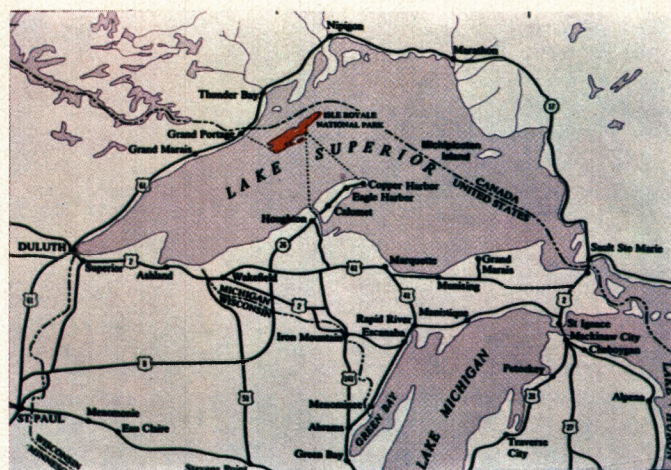


encouraged Captain Brian to ship anchors and *Kamloops* made for Port Arthur behind the steamers *Quedoc* and *Winnipeg*. The trio approached the dangerous northeast tip of Isle Royale in a blinding snow storm. Clearing the channel between Blake's Point and Passage Island, the ships faced into the intensifying storm. Winds out of the northwest at 30 to 40 knots piled up mountainous seas. The air temperature was -17° F. and the snow was so thick that none of the captains

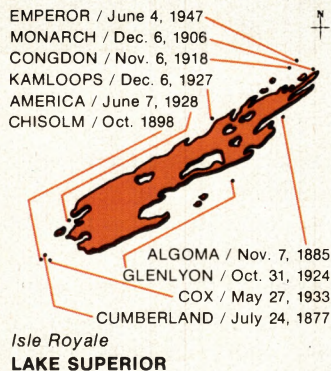
were able to get a fix on Passage Island light.

Somewhere beyond Passage Island the vessels separated. Captain Simpson steered the *Quedoc* directly to Port Arthur. Captain LaRush ran the *Winnipeg* on a northerly course, sheltering for a day among the many islands on the Canadian shore.

Arriving in Port Arthur, Captain LaRush inquired after the *Kamloops*, reporting she had been following closely but that he lost sight of her north of Isle Royale.



EMPEROR / June 4, 1947
MONARCH / Dec. 6, 1906
CONGDON / Nov. 6, 1918
KAMLOOPS / Dec. 6, 1927
AMERICA / June 7, 1928
CHISOLM / Oct. 1898



LAKE SUPERIOR



These shoes were part of Kamloops cargo. Thousands of clothespins washed up on Twelve O'Clock Point after the wreck.

A real search for the *Kamloops* did not begin for a week after her expected arrival. It was not unusual for vessels to arrive several days late and she might well have sought shelter on the north shore or gotten frozen in at some remote bay. She carried no wireless and so could not communicate her situation. Plenty of provisions were aboard to last out the winter if the need arose.

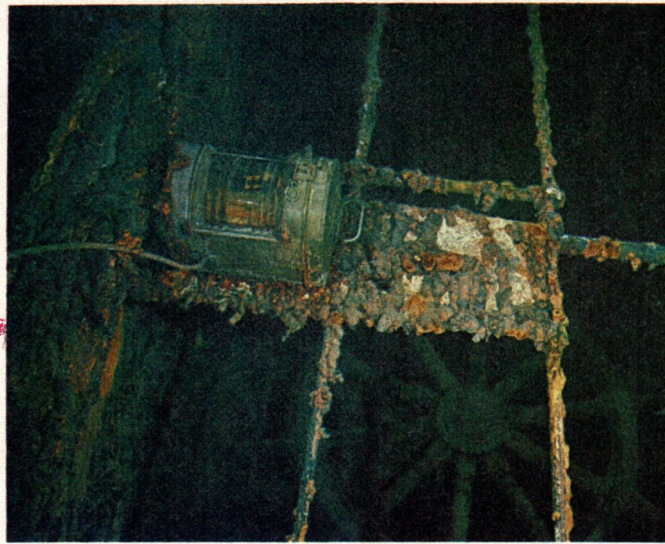
Finally the ice-breaking tug *James Whalen* set out in search of the *Kamloops*. Despite Captain LaRush's last positive sighting of the *Kamloops* just north of Isle Royale, the search concentrated on the Canadian north shore and as far as the Keweenaw Peninsula, hastily sweeping by the treacherous island. After two weeks of intense survey there was still no

sign of the *Kamloops* or her crew. Harbor ice in Thunder Bay ended the search at Christmas with no news of the missing vessel.

In late May, 1928, commercial fisherman David Lind discovered two ice-encrusted bodies while checking his nets off Twelve O'Clock Point on the northwest side of Isle Royale. During the next month seven more bodies were discovered, including Alice Bettridge and First Mate Henry Genest. Genest was found more than 300 feet from shore in a rude shelter of brush.

Because the temperature dipped to -24° F. the night of December 7, 1927, it can be assumed that Alice Bettridge perished then, within 24 hours of the wreck. Wreckage found off Twelve O'Clock Point that spring included part of one lifeboat, hatch

The telegraph in the engine room reads "Finished With Engine". It's possible that the ship's triple expansion steam engine failed or that her stack was blown off, setting Kamloops adrift in the storm. Captain Roy Oberg (inset) located Kamloops on recording sonar years ago, but no one believed he'd found the wreck until Ken Merryman, Rick Saulter, Randy Saulter and Ken Englebrecht confirmed the location.



covers, life rings, the pilothouse roof and Captain Brian's trunk.

Despite all evidence of a shipwreck nearby, the *Kamloops* was still missing. Little was heard of or written about the ship although many searched for her, particularly in recent years. The passing seasons merely deepened the mystery.

In the mid-1960's Captain Roy Oberg of the *Voyageur* out of Grand Portage, Minnesota, reported getting a promising strike on his recording sonar. While making a routine trip around Isle Royale delivering campers and picking up fish, Oberg located what he believed to be a boat about 200 feet long in 40 fathoms of water just off Twelve O'Clock Point. Roy told a lot of people about the find but no one listened, until Captain Ken Merryman of Minneapolis heard about it.

On a warm day, August 21, 1977, the cruiser *Heyboy* set out for Twelve O'Clock Point. Aboard were Ken Merryman, Randy and Rick Saulter, Ken

Englebrecht and Dan Kohlman. As they cruised the point, Roy Oberg happened by. They explained their search and Oberg pointed them to a spot about 300 feet offshore. Setting anchor, the crew geared up.

Ken Englebrecht and Randy Saulter, the first divers down, spotted a brass barrel and a ladder off the ledge nearest shore. The next day, Ken Merryman and Dan Kohlman saw more wreckage. Ken reported seeing a truck load of pipe on the ledge.

Randy and Ken Englebrecht started in the area where Merryman left off. At 180 feet they found bales of wire, pipe and wooden boxes. Randy scanned the debris, and Ken, looking up, perceived a large hulk and a shadow protruding from the mass — the ship's flagpole!

Ecstatic, the two surfaced, impatiently waiting out the decompression stops. It's every diver's dream to find a virgin, untouched shipwreck. To locate the Ghost Wreck must have given the *Heyboy's* divers an incredible charge.

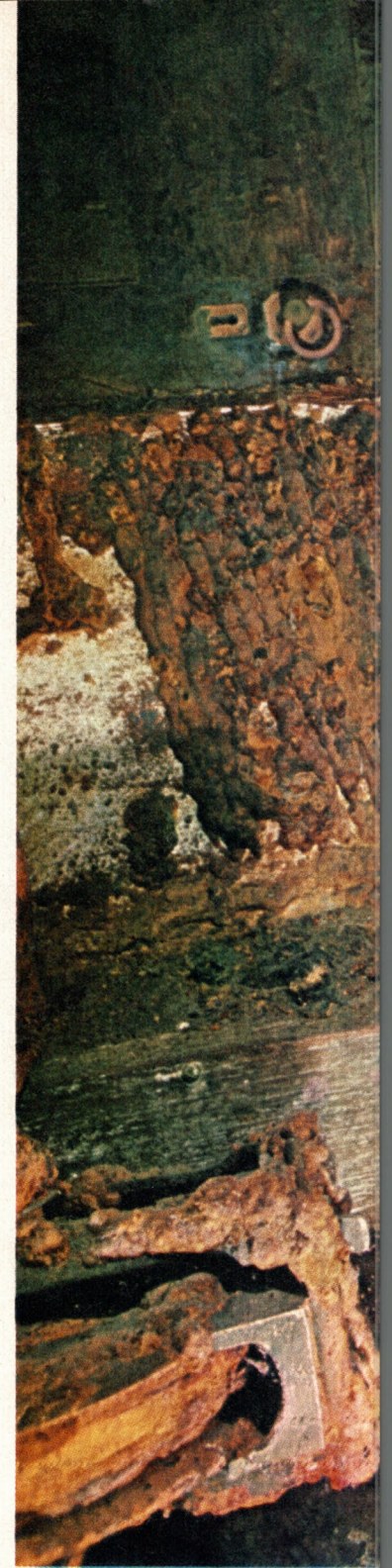
Two weeks later, I was aboard the *Superior Diver* with Captain John Nelson, Ken Merryman and Randy Saulter. With discoverers along to guide me, I was to document and photograph the vessel for positive identification. The short four-hour run dragged interminably as we talked over plans for the next few days.

The morning air was fresh, and the sun shone as we pulled over the wreck. Completing the final checks, we made our descent on a line previously secured to the wreck. John Nelson went with me and appears in the photographs of the ship.

At 150 feet we hit total darkness, switching on the dive lights. At 175 feet we found the stern railing where the line was attached. Approaching the stern wheel and a binnacle stand made of brass the gauges read 190 feet. Over the fantail we saw our proof, the large white letters, *K-A-M-L-O-O-P-S*.

Instead of bottoming on the shoal the steamer went down on her starboard side, so the rudder and propeller are

intact, as is her stern running light. Strobe flashing, we passed over the stern wheel and on to the engine room ventilator. Almost 15 minutes into the dive we began our ascent to the predetermined decompression stops, with plenty of safety margin

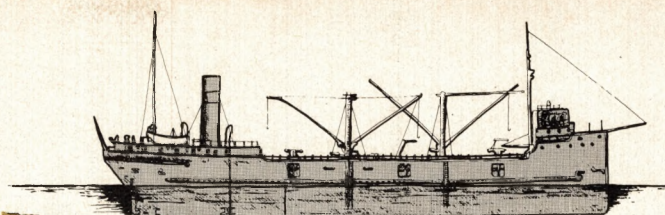




both on the tables and in our tanks.

During 1978, after many similar dives to photograph the wreck, the following things became clear. The bow points away from Isle Royale and reaches a depth of 265 feet. The forward pilot

house was sheered clean away from the deck, but the forward running lights are intact. The bow is dug into the sand and mud on her starboard side. The kingposts are still intact and much of the cargo remains in the holds or is spilled out directly beneath.



KAMLOOPS

Kamloops was built in 1924 in England for Canada Steamship Lines. Two hundred and fifty feet long, 42 feet abeam with a depth of 25 feet, she went 2400 gross tons. *Kamloops* was called the Great Lakes Tramp, as a package freighter she hauled any sort of cargo available. On her last trip she carried fencing wire, water pipe, machinery and miscellaneous dry goods.

Kamloops lies on her starboard side at the base of Twelve O'Clock Point. The stern begins at 175 feet, the bow hits 265 feet at bottom.

Illustration:
Don Warren

A penetration of the engine room revealed the telegraph, used by bridge personnel to give throttle instructions to the engine room crew, reads "Finished With Engine." The well-preserved body of an engineman remains inside.

The wreck is almost completely intact. It is possible she had some engine problem, or perhaps she lost her stack in the heavy seas and brisk winds, leaving *Kamloops* helplessly adrift in the northwest gale. Even a fine new ship is no match for Lake Superior when she's in her most ugly mood. Many strong vessels succumbed under the relentless pounding of the cold green water and the sailors of the Great Lakes simply accept the possibility that they too

may die freezing on the hard shore of Isle Royale.

Kamloops carried the title Ghost Ship for over 50 years until she was finally sought out by divers. There are other unlocated wrecks in the Lake, victims of countless other storms; ships that couldn't match the strength of the Great Lake. But none of them have quite approached the notoriety or can invoke the awe that affects a veteran Lake captain when someone mentions the queen of Superior's mystery fleet, the *Kamloops*.

A complete account of the *Kamloops* disaster will appear in a book by Ken Hafner and Thom Holder, "The Photographic Documentary of the Shipwrecks of Isle Royale", to be published in 1979.

PHOENICIAN



Story and Photography by Robert F. Marx

There are few places in the world where such a wide span of history can be seen in such a small area as on the rocky coast of Phoenicia, present-day Lebanon. This beautiful country is known as the "Crossroads of Civilization" and is at the meeting point of three continents — Europe, Asia and Africa. During its 7,000-year history it has been the stage where Chaldeans, Babylonians, Assyrians,

The ruins of Tyre along the coast of Lebanon (above). The rocks in the foreground are the remains of the ancient seawall.

Egyptians, Phoenicians, Hittites, Persians, Greeks, Romans, Arabs, Turks and Christian Crusaders fought and settled. But no one populated the land as long, or brought the country as much fame and glory, as the Phoenicians.

They were one of the greatest maritime peoples of the world, and it's possible that they were the first from the Old World to have sailed across the Atlantic to discover the

SHIPWRECKS



Americas. For more than 2,000 years their skill and willingness to voyage where others dared not venture, combined with their practicality, gave them an undisputed monopoly over the sea routes and maritime trade throughout the Mediterranean and in many other areas of the known world. These master mariners ranged as far north as Cornwall in England and out into the Atlantic to the Azores 2,000 years before Columbus. They traded in tin, silver, horses, spices, ivory, Tyrian purple and precious stones, among others.

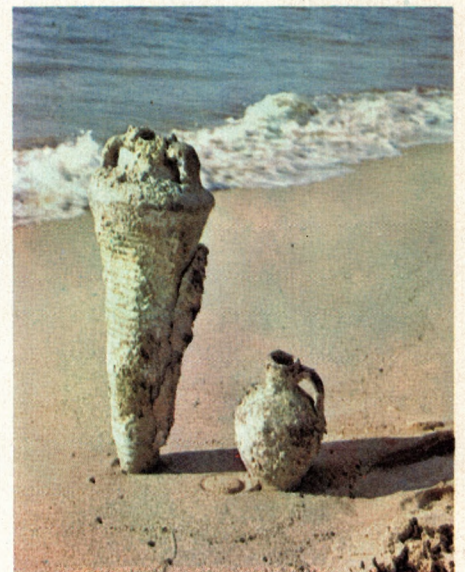
During the past 20 years I have amassed documentary and archaeological evidence to indicate that the Phoenicians made trans-Atlantic crossings to the New World before any others in the Old World. Many scholars, ignorant of ancient shipping and the nautical capabilities of early mariners, mistakenly believe that the Phoenicians had neither the vessels nor the knowledge to make oceanic voyages. To disprove this, I plan to build a replica Phoenician ship and voyage to America. Unfortunately, very little is known

about the construction of Phoenician vessels, even though depictions of them have been found on coins, stone carvings and ceramic objects, and there are a few mentions of them in ancient literary sources. The best way to obtain the details of construction would be through the discovery and careful excavation of a Phoenician wreck. Until recently none had been found, and so my first step was to try and locate one.

At the invitation of Emir Maurice Chehab, the Director General of Antiquities of Lebanon, I made a preliminary exploration of the ancient ports of Byblos, Sidon and Tyre to determine if there was enough sediment on the sea floor of these ports to preserve the remains of Phoenician shipwrecks. When ships were lost on rocky or coral-covered bottoms very little, if any, of their wooden hulls survived over the centuries because of exposure and the devastations of shipworms.



Rare figures of the goddess Tanit (above left) were found during the exploration. The Roman statue (above right) was found near Sidon.



Just a few days before I was to fly to Lebanon with Milt Machlin of **Argosy Magazine** and Jack Kelley, a diving friend from Tulsa, the **New York Times** carried a story about a Phoenician wreck, dating around the fifth century B.C., which had been discovered off the coast of Israel near the port of Shavei Zion, quite close to the Lebanese

border. This find excited the archaeological world not only because it was the first Phoenician wreck ever discovered, but also because part of the cargo it carried consisted of clay figurines of Tanit, the goddess of fertility and a principal female deity of the Phoenician world. These ranged in size from 6 to 15 inches. Previously archaeologists had found only drawings and symbols of the goddess, and impressions on bronze coins, all discovered during



excavations at Carthage in Tunisia. A telephone call to Dr. Elisha Linder, the archaeologist in charge of the newly found site, revealed that the cargo was found on a hard rocky bottom and that no traces of the ship had survived. I headed for Lebanon, hoping for better luck.

Our first stop was at Byblos, which, according to tradition, is the oldest continuously inhabited town in the world. Recent excavations have revealed the existence of the Neolithic culture dating back to

5000 B.C. Long before the Greeks and Romans arrived, Byblos was a powerful independent city-state with its own kings, culture and flourishing trade. During the third millenium B.C. it was the most important seaport in the Mediterranean until eclipsed by Tyre and Sidon. The alphabet that we use today was developed here.

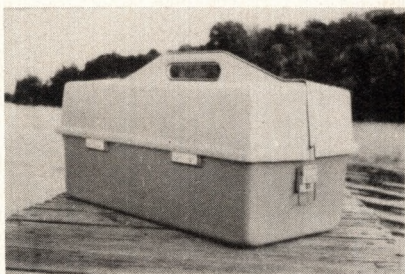
Although the coast is rocky, earthquakes over the centuries have toppled many of the ancient buildings into the sea and caused

land soil to slide into the water. Underneath all the debris there is a chance that remains of wrecks can be found. As a guide, Emir Chehab arranged for us to meet Pepe Abed, who owns the most impressive private museum in the country and has discovered priceless artifacts underwater at Byblos, including many Greek and Roman statues.

The water was cold — 45 degrees — but the excitement of diving in such a place kept us from minding the temperature. I'll never forget my first look at the sea floor off Byblos. It was like an underwater museum: scattered over the bottom were large numbers of immense marble columns and worked building stones, many with beautiful designs carved into them, covering thousands of years of history. Even more exciting was our discovery of the cargo of a Phoenician shipwreck dating to the eighth century B.C., consisting of

continued next page

GEAR CARRIER



- **Unique—universal gear carrier**
- **Especially designed for divers — by divers**
- **5,000 cu. in. (60% more capacity)**
- **Strong, durable, break resistant plastic**
- **Designed with corrosion resistance in mind**
- **30" long x 14" high x 12" wide**
- **Will hold all gear you can carry**
- **Attractive two-tone azure and aqua blue**
- **Lockable latches for security (locks not furnished)**
- **Tasteful vinyl grained finish**

**SPECIAL
INTRODUCTORY PRICE**
\$39⁹⁵ INCLUDES SHIPPING
IN CONTINENTAL U.S.A.

Send check or money order to:

WORLD DIVERS
P.O. Box 334
Oxford, Ohio 45056
(Dealer Inquiries Invited)

CALL TOLL-FREE

FOR
Florida Springs
dive information
1-800-342-7156 (GA)
1-800-841-4443 (others)
Sub-Aqua Specialties
now offers the
most current weather
reports and site conditions
on Florida's most popular
dive locations

Call today and receive
Free Air Card



Sub-Aqua Specialties

2236 Bemis Rd., Dept. SP
Valdosta, GA 31601

PHOENICIAN SHIPWRECKS

continued from previous page

amphoras and other ceramic objects. However, we found no wood of the ship's hull. During the four days we spent surveying the site, we recovered eight Phoenician stone anchors, part of a Roman statue, many ceramic artifacts and sherds covering a span of 3000 years.

We moved on to Sidon, founded circa 1400 B.C. and second only to Tyre in the heyday of the Phoenicians. This city was destroyed many times by earthquakes and invaders, and very little of the fabled ancient town can be seen today. The most impressive building still standing, a sea fortress built by the Crusaders at the port entrance, only dates to the 12th century A.D. After diving at Byblos, we found Sidon to be a bit of a letdown since the sea floor was covered with tons of modern trash, and it was almost impossible to find any remains from antiquity without first removing the layers of debris. In addition, a large portion of the sea bed was covered with thousands of projectiles and bombs, all of them still armed. During the Second World War, before a fleet of Vichy French warships surrendered to the British, they jettisoned their munitions overboard at their anchorage off Sidon. Nevertheless, we were fortunate in finding the cargo of a second Phoenician ship, a cargo of amphoras, but no traces of the ship itself.

Tyre, founded by the Phoenicians in 2750 B.C., was one of the most celebrated cities in the ancient world. Her flourishing maritime trade, colonies all over the Mediterranean and Atlantic coast and famous purple dye and glass industries made her the most important commercial center in the eastern Mediterranean.

Originally Tyre consisted of a mainland settlement and an island city a short distance offshore. In 332 B.C. Alexander the Great stopped with his army at Tyre's mainland settlement and was offered full hospitality by the inhabitants. Those living on the island, believing themselves invincible behind a 150-foot wall which surrounded the city and a large fleet of galleys which formed a barrier to the entrance of their two harbors, refused entrance to Alexander and his men. Incensed by this breach of courtesy, Alexander laid siege to the island for seven months. A fleet of 250 vessels was assembled to blockade the city by sea, and during a number of encounters ships

were lost by both sides.

This is the first recorded time that divers were used in warfare — and both sides employed them. The Macedonians, after reducing the fighting spirit of the defenders, gave their divers the task of destroying the boom defenses of the harbors, and the Tyrian divers rebuilt them. According to legend, Alexander himself descended in a diving bell to inspect the destruction of the defenses: After failing to capture the city by sea, the Macedonians built a causeway connecting the island to the mainland and made use of it to breach the city walls. Once inside, Alexander's men massacred more than 11,000 inhabitants and sold 30,000 others into slavery. Before departing they set the city afire and razed it to the ground.

Although Tyre was rebuilt, it never regained its former glory. Carthage, on the African coast, soon replaced it as the most important Phoenician seaport in the Mediterranean. Many believe that some portion of Tyre's island-city is now under the sea and covered by sand, and at Byblos, the sea floor around the island is littered with hundreds of columns and massive building stones. The ancient jetties and moles of the two harbors are also visible underwater at an average depth of 36 feet. Excavations on land during the past 30 years have uncovered remains of Crusader, Arab, Byzantine and Graeco-Roman cities, but the archaeologists have not yet reached the level of the Phoenician city.

Arriving at Tyre we were shocked to see a clam-shell dredge being used to deepen the modern harbor, one of the two harbors in use in ancient times. As bucket after bucket of mud was brought up we spotted many artifacts, including a couple of miraculously intact Roman amphoras. When one of the Lebanese archaeologists who had been assigned to work with us tried to take possession of several important objects, a number of the workmen launched into a furious argument; violence was only averted by the well-timed arrival of several police officers.

We were soon to discover that the modern inhabitants of Tyre feel that anything coming out of the sea belongs to them by right, and not to the government. The illegal sale of ancient artifacts is one of the town's main businesses. Several dozen sponge divers work out of the port and are known to make much more from the sale of antiquities than from the sponges they recover. They took great offense at our coming there to find anything that might deprive them of a source of income. Most of the fishermen felt the same way, and it

continued page 128

ALASKA

Alaska Aquatic Dive Center
NASDS Inst.-Full Svs. Scubapro Shop-Air-
Rentals-2 man chamber-Hydro & Tumble-
Boat Trips-Catalog Sls-C card reqd.
503 Water St., Ketchikan, Alaska 99901
(907) 225-5020, 225-DEEP

ARIZONA

Scuba Sciences, Inc.
Arizona's Most Active Dive Center
8502 N. Black Canyon Hwy., Phx., AZ
85009 (602) 997-7161; 616 S. Myrtle, Tempe,
AZ 85281 (602) 275-1221

Aqua Sports, Inc.
First pro dive shop in Arizona. Original
owners since 1955. 4230 E. Indian School
Rd., Phoenix, AZ (602) 955-4120

ARKANSAS

Scuba Hut — Sportsco
Custom Screening & Transfers-Shirts-
Instruction-Air-Rental-Boats
1115 S. Hwy. 71, Springdale, AR 72764
(501) 751-0636

CALIFORNIA

California Skin Diving School
1083 N. Harbor Blvd., Anaheim, CA 92801
(714) 991-DIVE; 9762 Magnolia, Riverside, CA
92503 (714) 689-2422; 1173 N. E St., San
Bernadino, CA 92410 (714) 885-1416;
4420 Holt Blvd., Montclair, CA 91763
(714) 621-4171

Sea To Sea Scuba School
NAUI-PADI-YMCA Instruction, all levels-
Sales-Repairs-Rentals-Travel Pkgs.-Air
10950 S. Mt. Vernon, Colton, CA 92324
(714) 825-2502

Divers Corner
11200 Old River School Rd.
Downey, CA 90241
(213) 927-1417

Ocean Sports, Ltd.
NAUI-PADI-Sales-Rentals-Repairs-Air 3000
PSI-Trips. 16446 Bolsa Chica, Huntington
Beach, CA 92649 (714) 840-4840

New England Divers, Inc.
Open 7 Days-NAUI-PADI Certification
11830 W. Pico, Los Angeles, CA (213) 477-
5021; 3860 Rosecrans, San Diego, CA
(714) 298-0531; 8363 Center Dr., La Mesa,
CA (714) 462-4570

Aquarius Monterey
Vacation beautiful Monterey, Calif.; Giant
compressor-Rentals-Much Equipment. Call
for info or conditions. 2240 Del Monte Ave.,
Monterey, CA 93940 (408) 375-1933

Divers Down-San Fernando Valley
Complete Instruction-Open Water
Certification-Htd. Pool-Dive Trips-Equip.
Sales-Rentals. 6742 Reseda Blvd., Reseda,
CA 91335 (213) 342-1212

Scuba Duba Dive
12538 Ventura Blvd., Studio City, CA 91604
(213) 761-7833
7126 Reseda Blvd., Reseda, CA 91335
(213) 881-4545

The Underwater Experience, Inc.
Gateway to Channel Islands Diving-Sales-
Rentals-Inst.-Air-Charter boat dives. 824
Thousand Oaks Blvd., Thousand Oaks, CA
91360 (213) 991-4151; (805) 497-0855

CONNECTICUT

Orbit Marine Sports Center
NAUI-PADI Instruction. Sales-Rentals-Air-
Trips-Hydro-Visual Insp. 3273 Fairfield Ave.,
Bridgeport, Conn. 06605
(203) 333-DIVE

The Diving Bell
Sales-Rentals-Repairs-Air-Hydrotest-Certified
Instruction-Open all year. Dive Lake
Candlewood. Rt. #7, Rd. 5, Brookfield, CT
06804 (203) 775-3573

Aqua Sports, Inc.
Air Station-Instruction-Service-Salvage
Repairs-Tank Testing & Cleaning. Victor G.
Worst & Phyllis C. Tetrault, Rt. 12 & Long
Cove Rd., Gales Ferry, CT 06335
(203) 464-7878

Will Jacobs Dive Shop
Sales-Service-Rentals-Hydro-Instruction.
1153 New Britain Ave. W., Hartford, CT
06110 (203) 232-8719

Jack's Dive Center
Sales-Service-Instruction-Rentals-Trips-
Photography & Commercial Equip.-5000 psi
air-AGA Divator. Rt. 10, Plainville, CT 06062
(203) 747-3170

The Scuba Shoppe/Recreation
Unlimited — Cross Country Alpine Skiing
Full service dive shop-Scuba lessons-All levels
of certification. Foot of Broad St., Stratford
Marina, Stratford, CT 06497 (203) 377-6969

FLORIDA

Underseas Inc.
Key's largest pro dive shop-Daily half & full
day reef trips to Looe Key-Charters to Cay
Sal Bank, BA-Sales-Repairs-Rentals-All major
credit cards. P.O. Box 319, MM 31, Big Pine
Key, FL 33043 (305) 872-2700; 872-9555

Nautilus Dive, Surf & Ski
Open 7 days a week. Rentals-Air-Instruction-
Trips-Repairs. 877 E. Palmetto Park Rd.,
Boca Raton, FL 33432 (305) 368-0555

Florida Divers Service, Inc.
Dive boat Bottoms Up-Reef trips-Air-Pro
Shop. 2280 N. Federal Hwy., Boynton Beach,
FL 33435 (305) 737-7240

Gulfview Divers Headquarters
Air-Rentals-Sales-Underwater Photog-
raphy-Hydro testing-Pool on premises-Dive
trips-PADI Inst. 101 Bridge St., Bradenton
Beach, FL 33510 (813) 778-3735

Charlotte Diver
Sales-Service-Rentals-Lessons-Air.
861 S.E. Tamiami Trail, Charlotte Harbor, FL
33950 (813) 629-2722

Pro Dive Store Directory

Herb's Dive Shop
Reef Trips-Scuba Tours.
2434 S. Atlantic Ave., Daytona Beach, FL
32018 (904) 253-7221

Professional Diving Schools of Florida
Instruction, Private & Group-PADI-YMCA-
NASDS-Complete line of dive equip. &
accessories-Air-Rentals-Repairs-Daily reef
trips to local reefs, the Keys or Bahamas-3
stores to serve you. 210 N. Federal Hwy.,
Deerfield Beach, FL 33441 (305) 785-0780,
428-0560, 761-3413

The Diving Locker
Sales-Service-Rentals-Instruction.
1008 Seaway Dr., Fort Pierce, FL 33450
(305) 465-0614

Divers Haven
Sales-Instruction-Service-NASDS instruction-
Air-Charters for groups-U/W photo.
1530 Cordova Rd., Ft. Lauderdale, FL 33316
(305) 524-2112

Underseas Sports, Inc.
Scuba gear-Sales-Service-NAUI-PADI
YMCA Instruction-Reef trips daily-Complete
line U/W photography-Open 7 days a week.
850 N. Federal Hwy., Ft. Lauderdale, FL
33304 (305) 763-4300

Allen's Aquatic & Trail Center
Sales-Service-Inst.-Air-Scubapro-Dacor-U.S.
Divers-Farallon-Ikelite-Bayley. 3448 W.
University Ave., Gainesville, FL 32607
(904) 373-9233

Divers Unlimited
Awarded #1 training facility for '75, '76, & '77-
PADI Instruction-Sales-National repair center.
4231 Hollywood Blvd., Hollywood, FL 33316
(305) 981-0156

Holiday Isle Dive Center & Resort
Reef trips-Air-Rentals-Beautiful resort and tiki bar. Upper Florida Keys. MM 84½, Overseas Hwy., Box 482 SP, Islamorada, FL 33036

The Scuba Shack
Rentals-Air-Instructions-Trips-Repairs.
2485 N.E. Dixie Ave., Jensen Beach, FL 33457 (305) 334-8808

American Diving Headquarters
Charters to Pennekamp Park-Air-Retail-Whlsl.-Rentals-Motel Reserv's.-NASDS-NAUI Inst. MM 106, Rt. #1, Box 274-B, Key Largo, FL 33037 (305) 451-0037

Bill Crawford's Tropic Isle Dive Shop
Reef Trips-Air 5000-Rentals-PADI Inst. Dive Pennekamp. P.O. Box 755, Key Largo, FL 33037 (305) 451-1063

Divers World of Key Largo
Daily reef trips-Rentals-Air-Sales-Instruction. On the ocean at Mandalay Marina-Mile Marker 97.5, P.O. Box 1663, Key Largo, FL 33037 (305) 852-5498

Dolphin Dive Center
Daily reef trips-Instruction-Rentals-Group rates-Charters-Accommodations.
3400 N. Overseas Hwy., Key Largo, FL 33037; 24 hour hot line (305) 451-1381

Holiday Inn Hotel
Super dive with Capt. Bob Klein. Cay Sal trips all summer. Pennekamp Park all winter aboard the 50'-plus *Ultra*. Mile Marker 100, Key Largo, FL 33037 (305) 451-2121

Key Largo Diving Headquarters
Reef trips-Air-Rentals-Dorms-Motel-Group rates-Cay Sal & Bahama trips-24 hour hot line. Rt. # 1, Box 293, Key Largo, FL 33037 (305) 451-1151

Sea Fever Diving Cruises
Bahama & Florida Keys dive trips-3 to 10 day charters-Group rates-U.S.C.G. approved.
P.O. Box 1335, Key Largo, FL 33037 (305) 451-0005

Key West Pro Dive Shop, Inc.
"Key West's Oldest Dive Shop"
1605 N. Roosevelt Blvd., Key West, FL 33040 (305) 296-3823

Pioneers Dive Center
"Specializing in Dive Adventures"
At the Hilton Haven Hotel. P.O. Box 333, Key West, FL 33040 (305) 296-3044

Fred & Cindy's Atlantis Marina
Boat rentals to the reef-Camping-Motels-Air-Rentals-Trips-Complete dive service.
P.O. Box 708, Long Key, FL 33001 (305) 664-4318

Diver's World, Inc.
On Florida's West Coast
57' Charter Dive Boat-PADI Inst.
13613 Gulf Blvd., Madeira Beach, FL 33708 (813) 392-8978

The Diving Site Pro Dive Shop
Daily Reef Trips. Half day w/2 dives \$15.
Sales-Rentals-Repairs-Hydro testing. Charter rates available. 40' and 28' dive boats. Master Charge and Bank Americard. 12565 Overseas Hwy., Marathon, FL 33050 (305) 289-1021

124 Sport Diver

Hall's Diving Center
Trips-Rentals-Cert. Instruction-5000 PSI-7 day inst. courses. Host: Bob & Linda Brayman, 9-6, 7 days. 1688 Overseas Hwy., Marathon, FL 33050 (305) 743-5929

Hatts Diving Headquarters
Scubapro-Sherwood-U.S.D.-Ilkelite-PADI-Air-Rentals-Hydrostating. 2006 S. Front St., Melbourne, FL 32951 (305) 723-5932

Missile Skin Diving
NASDS Instruction-Trips-Monthly news letter, \$1.00 per year. Come dive with us.
691 N. Courtney Parkway, Merritt Island, FL 32952 (305) 453-0600

Diver's Den South
Sales-Service-Rentals-Trips-PADI-NAUI-YMCA Inst. 12614 N. Kendall Dr., Miami, FL 33186 (305) 595-2010

The Diving Locker
295 Sunny Isles Blvd.
N. Miami Beach, FL 33160 (305) 947-6025

Pisces Divers, Inc.
Your full service dive facility in North Dade-Service-Sales-Trips-The best of instruction.
14328 Biscayne Blvd., N. Miami Beach, FL 33181 (305) 944-2310

Matheny's Aquatics Unlimited
Host to Fla. Springs/Bahamas. Scubapro-Dacor-Swimaster-Stag-NASDS-YMCA-NAUI-PADI-Facility. 556 Kingsley Ave., Orange Park, FL 32073 (904) 264-3357

Hal Watt's Aquatic & Trail Center, Inc.
Instr.-Sales-Rentals-Repair-Guides-Back Packing-Hiking-Complete Health Spa.
2000 N. Mills Ave., Orlando, FL 32807 (305) 896-4541

Scott's Swim & Scuba Center
Underwater photo headquarters-NAUI-PADI-YMCA-Scuba & swim lessons-Private and Group-Charters to Bahamas, Cuba, Cozumel
3465 Edgewater Dr., Orlando, FL 32804 (305) 425-8811

Diver's Den
NAUI-PADI-YMCA Inst.-Dacor-Air 3500 psi-Trips-Rental-Sales-Service. 4700 E. Hwy. 98, Box 10606, Panama City, FL 32401 (904) 769-1321

Pro Divers Shop
NAUI-PADI Instruction-Air Station 400 PSI-Group rates-Rentals-Sales-Charter boats-Information. 1218 Beck Ave., Panama City, FL 32401 (904) 785-5300 (7 days a week)

Aquatic Gateway
Full line diving center-Open 7 days-Free area reef map. 15 N. Federal Hwy., Pompano Beach, FL 33062 (305) 782-5768

Sea Pro Scuba Center
Scuba Instruction-Resort Courses-Rentals-5000 PSI-Air Station-Daily reef and wreck trips-Several custom boats available, including 37' for large groups. 3619 Broadway, Riviera Beach, FL 33404 (305) 844-DIVE

Sunshine Aqua Center
Dive-Fish-Camp-3500 PSI Air-Reef trips to LOOE KEY on 65' and 24' boats-group rates.
Rt. 1, Box 790-L, Sunshine Key, FL 33043 (305) 872-2400

The Dive Shop, Inc.
Diving gear and instruction-Surf shop-Hobie sail boats-Trips in Florida to the Bahamas.
1325 S. Washington Ave., Titusville, FL 32780

Divers World Undersea Center
Daily boat trips-1 and 2 tank dives-Full service. 2525 Lake Drive, Riviera Beach, FL 33404 (305) 844-1510; 601 South Olive, West Palm Beach, FL 33401 (305) 655-3045

GEORGIA

Diving World USA
Largest Dive Shop in GA-All brands-GA's Recompression Chamber (3 man)-YMCA Classes-Rental-Repair. 2945 Buford Hwy. N.E., Atlanta, GA 30329 (404) 634-4354

Dive and Leisure Sports
PADI Training Facility-Monthly Dive Trips.
3365 Main Street, College Park, GA 30337 (404) 767-1815

Sub-Aqua Specialties
Sales-Service-Rentals-PADI Inst.-Heated Pool-5000 PSI Air-Fla. Diving Information.
2236 Bemis Rd., Valdosta, GA 31601
1-800-342-7156 (GA); 1-800-841-4443 (others).

HAWAII

South Seas Aquatics
1125 Ala Moana Blvd.
Honolulu, Hawaii 96814
(808) 538-3854

Aaron's Dive Shop, Inc.
Plane work-Charters-U/W Scooters-Shelling-Our guides capture your dive on film-NASDS-Full Service Store-Instruction. 39 Maluniu Ave., Kailua, HI 96734
(808) 261-1211

Central Pacific Divers
Daily Charters to the Best Diving on a choice of 6 islands-Sales-Charters-Instr.
780 Front St., Lahaina Mani, HI 96761
74-5484 Kaiwi St., Kailua Kona, HI 96740

Hawaiian Divers
The Experts in Kona
Charters-Air-Gear
Box 572, Kailua Kona, HI 96740
(808) 329-3407

Aloha Dive Shop
"Gateway to Hanauma Bay"
Retail Sales-Service-Air-Rentals-Charters-Boat & Shore Dives-Inst. Koko Marina, Hawaii Kai, HI 96825 (808) 395-5922

Sea Sage Unlimited
"Kauai's Only Complete Pro Dive Ctrs."
Just a 15 min. drive from any hotel. Out of the ordinary? So are we! 4544 Kukui St., Kapaa, HI 822-3841; Poipu 742-1262; Hanalei 826-6180

Garden Island Marine Lihue, Kauai
Fantastic Diving-NAUI-PADI cert.-Scuba Charters-Boat Dives-Instruction-Fishing Charters. R.R. #1, Box 180 B, Lihue, HI 96766 (808) 245-6361

Dan's Dive Shop, Inc.
"The Best on Oahu"-Daily dive tours-Complete dive center for novice/pro-5 day certification course. 1382 Makaloa, Honolulu, HI 96814 (808) 941-2284

ILLINOIS

Academy Aqua Sports Dist. Ltd.
Air-Sales-Service-Instruction
2838 Chicago Rd., S. Chicago Hts., IL 60411
(312) 756-4334

Underseas Scuba Center
Sales-Service-Instruction-Trips
226 South Main St., Lombard, IL 60148
(312) 629-2534

Midwest Diving Specialists, Inc.
Dacor-Global-Ikelite-Imperial-Poseidon-White
Stag-PADI Inst.-Air. 203 S. Linden, Normal,
IL 61761 (309) 452-0222

Anchor In Scuba Center
All major brands diving equipment-
Underwater Photography-Sales-Instruction.
315 W. Odgen Ave., Westmont, IL 60559
(312) 917-1060; 6932 W. 16th St., Berwin, IL
60402 (312) 484-1018

KANSAS

Topeka Dive Shop
NAUI-PADI-Air-Tours
Stauky Marina on Beaver Lake
Arkansas. 1425 Lane, Topeka, Kansas 66604
(913) 357-4895

KENTUCKY

Lexington Dive Shop, Inc.
Everything in diving.
819 Euclid Ave., Lexington, KY 40502
(606) 266-4703

LOUISIANA

Underwater World Dive Shop
(Bob and Terry Noe)
PADI Instruction-Air-Rentals-Service-
Scubapro and Dacor Sales. Toledo Bend
Marina, South Toledo Bend Lake.
602 W. North St., Leesville, LA 71446
(318) 328-1368

Harry's Dive Shop, Inc.
Skin-Scuba-Commercial Equip.-Sales-Service-
Repairs-Airfills-USCG Cert. Dive Boat.
4709 Airline Hwy., Metairie, LA 70001
(504) 888-4882

MARYLAND

Diver's Den, Inc.
Maryland's Oldest Dive Store
Sales-Service-Air-Rentals-Inst.-Boat Trips-
Tours-Metal Detectors. 8105 Harford Rd.,
Baltimore, MD 21234 (301) 668-6866

Port Hole Dive Shop
Sales-Service-Rentals-In House hydrostatic
testing-Charter trips. 9635 Reister's Town
Rd., Baltimore, MD 32055 (301) 363-3388

The Scuba Hut, Inc.
Maryland's largest full line pro dive store.
Instruction-Charter-Travel-Service
418 Crain Hwy. S.W., Glen Burnie, MD
21061 (301) 761-4520

MASSACHUSETTS

Al's Rod & Gun Shop
Professional Service-Sales-Air-Instruction-
Hydros. We are the best! 400 Broadway, Rt.
28, Lawrence, Mass. 01841 (617) 683-0310

Eastern Divers Supply, Inc.
Full service pro shop.
190 Middlesex St., Lowell, MA 01852
(617) 453-7374

MICHIGAN

Holly Scuba Center, Inc.
Instruction-Rentals-Sales-Service-Complete
activity program available. 3525 Grange Hall
Rd., Holly, MI 48442 (313) 634-5913

MINNESOTA

Inter-Space U.W. Photos
Capt. Ken Hafner
Isle Royale Charters
6060 5th St. N.E., Minneapolis, MN 55432
(612) 571-9003

Scuba Center
Equipment-Instruction-Repair-Dive Trips-U/W
Photography. 5015 Penn. Ave. S.,
Minneapolis, MN 55410 (612) 925-4818

The Argonauts, Inc.
NAUI-PADI-All lines-Charter lake/sea-
5000 psi. 1040 University Ave., St. Paul, MN
55104 (612) 645-0831

MISSOURI

Skin-N-Scuba Dive Shop, Inc.
Sales-Service-Rentals-Instruction-Heated Pool-
PADI Training Facility. 1300 W. 40 Highway,
Blue Springs, MO 64015 (816) 229-0855

Hughes Dive Company
Sales-Service-Air-Rentals-Trips-Instruction-
PADI & SSI-Visual Inspection-Hydros. 437
Broadway, Cape Girardeau, MO 63701
(314) 335-0756

West End Diving Centers, Inc.
Retail-Whlsl-Repairs-Comprs-Instr.-Air 5000.
11004 Manchester, St. Louis, MO 63122
(314) 822-3005
11215 Nat. Bridge Rd., St. Louis, MO 63044
(314) 731-5003

NEBRASKA

Fathom Diving School (Clemens Marina)
Instruction-Sales-Repairs-Air-Rentals-
Excursions-NASDS-PADI. 1620 E. Overland,
Scottsbluff, NB 69361 (308) 632-3422

NEW HAMPSHIRE

Underwater Sports of New Hampshire
Lessons-Sales-Service-Rentals-Air-Hydro-
Trips-Salvage-Commercial Work.
334 Park Ave., Keene, NH 03431
(603) 375-4430

Atlantic Aquasport
5000 PSI Air-Rentals-Repairs-NASDS-NAUI-
PADI-SSI-Factory trained Unisuit repairs.
522 Sagamore Rd., Rye, NH 03870
(603) 436-4443

NEW JERSEY

Innerspace Divers of Long Beach Island
So. Jersey's Only Complete, Full Time Dive
Shop. Open 7 days a week year round.
2805 Long Beach Blvd., Beach Haven
Gardens, NJ 08008 (609) 492-0982

Cedar Grove Divers Supply
Nat/Certified Instruction-Private or group
lessons-Indoor heated pool-Full service dive
shop. 492 Pompton Ave., (Rt. 23), Cedar
Grove, NJ 07009 (201) 857-1748

The Edison Skin Diving Center
NASDS-YMCA-PADI-NAUI Inst.-Scubapro-
Bayley-Watergill Atpac-Imperial-Dacor-Unisuit
Sales-All other brands. 1659 Hwy. 27, Edison,
NJ 08817 (201) 985-2206

Lakeland Divers, Inc.
YMCA-NAUI-PADI-"The Full Service Dive
Shop"-Indoor heated pool on premises.
92 Route 10, East Hanover, NJ 07936
(201) 887-0194

Diver's Cove
The full service dive shop that cares.
Personalized open water inst.-Diving
vacations-Boat Charters. Hwy. 35, Laurence
Harbor, NJ 08879 (201) 583-2717

The Dive Shop of New Jersey
Scuba Diving Inst.-NAUI-YMCA-Boat Trips-
Sales-Service-Airfills-Open all year. 118 N.
Main, Pleasantville, NJ 08232 (609) 646-1008

4 Divers, Inc.
Refills-Repairs-Rentals-Recovery-Salvage-
PADI-YMCA. 56 Broadway, Pt. Pleasant
Beach, NJ 08742 (201) 899-7753

Princeton Aqua Sports
YMCA/NAUI/PADI Inst.-Air-Sales-Rentals-
Repairs-Hydros VIP-Wreck Dives/Tours.
306 Alexander, Princeton, NJ 08540
(609) 924-4240

Marlin Scuba
Air-Sales-Rentals-Repairs-Indoor Heated Pool-
PADI-YMCA-British Sub Aqua Inst.
506 Route 17, Ramsey, NJ 07446
(201) 327-6000

NEW MEXICO

Albuquerque Divers Den
PADI-NAUI-Training-Sales & Service-
Complete 5000 psi air station.
1741 Juan Tabo N.E., Albuquerque, NM
87112 (505) 294-1886

Watersports
PADI, SSI Instruction-Dacor-Swimaster-SAS.
5009 Menaul N.E., Albuquerque, NM 87110
(505) 266-5218

NEW YORK

The Dive Shop, Inc.
68' Dive Vessel-Indoor Pool-Rentals-Repairs-Hydros-Air \$1-Open 7 days-NAUI-PADI-
YMCA Inst. 110 W. Main St., Bay Shore, NY
11706 (516) 665-2526

Cougar Sports, Inc.
Full service pro shop. Inst.-Sales-Tours-Trips.
590 Central Park Ave., Scarsdale, NY 10583
(914) 472-9494; 3490 Webster Ave., Bronx,
NY 10467 (212) 881-5636

Kings County Divers Corp.
Brooklyn's Full Service Pro Shop.
Authorized Scubapro Dealer.
3040 Avenue U, Brooklyn, NY 11229
(212) 648-4232

Niagara Scuba Sports, Inc.
Local Charters-Tours-Sales-Rentals-Tank
testing-Certified Air-PADI-SSI-YMCA Inst.
2048 Niagara St., Buffalo, NY 14207
(716) 875-6529

Ed's Pro Dive Shop
Sales-Service-Rentals-Air 3000 PSI-YMCA-
PADI Inst. 92 Oakwood Ave., Elmira Heights,
NY 14903 (607) 733-3832

Richard's Aqualung Center
Largest pro dive shop-All latest gear-Quantity
prices-Service-Courses, Basic and Advanced.
233 W. 42nd St., Manhattan, NY 10036
(217) 947-5018

World Wide Divers
Scuba Inst.-U/W Photo Equip-Sales-Travel.
Bonaire's Aquaventure & Habitat, Bermuda,
Cozumel, Cayman, the World. 155 E. 55th
St., New York, NY 10022 (212) 688-2510

NORTH CAROLINA

Blue Dolphin Dive Shop, Inc.
PADI Training Facility S-202
2510 English Road, High Point, NC 27260
(919) 882-9726

OHIO

Buckeye Diving Schools
Complete tour packages-Individual or group-
Auth. Scubapro dealer-Service-Hydro-Tanks
tumbled-Rentals-U/W Photo classes & gear.
46 Warrensville Cntr. Rd., Bedford, OH
44146 (216) 439-3677

Diver's Paradise
Toledo's Oldest Pro Dive Shop
Basic & Advanced Inst.-Air-Sales-Service-
Rental-Dive Trips. 2511 N. Reynolds, Toledo,
OH 43615 (419) 535-6828

Underwater Sports of Ohio
PADI-YMCA Instruction-Air-Sales-Service-
Rentals. 703 S. Main Street, Urbana, OH
43078 (513) 653-5741

OKLAHOMA

Head Scuba
Full service dive shop-PADI-Basic through
Asst. Inst. 6624 S. Lewis, Tulsa, OK 74136
(918) 585-5819

126 Sport Diver

PENNSYLVANIA

Weber's Dive Shop, Inc.
Open M-T-T-F 6:00-9:00, Sat. 9-12 & 6-8
Auth. Scubapro Dealer, 153 State St., Baden,
PA 15005 (412) 869-7972 or (412) 266-6834

Anchor Line Diver, Inc.
Sales-Service-Rentals-Instruction-Dive tours
107 Bellevue Ave., Longhorne, PA 19047
(215) 752-7442

Atlantis Diving Center
M-T-TH-F 6 PM-8 PM, Sat. 11-5; Closed
Weds. & Sun.; 4363 Main Street, Manayunk,
Philadelphia, PA 19127 (215) 847-8650

The Diving Bell, Inc.
Open Monday thru Saturday-Free parking on
Pruyn lots. 681 N. Broad St., Philadelphia,
PA 19123 (215) 763-6868

Professional Diving Services Co.
Pitt. area's only full time, full service dive
shop. Mon. thru Sat. 10-3/6-9.
726 Pittsburgh St., Springdale, PA 15144
(412) 274-7719

York Skin Diver's Supply, Inc.
Instruction-Sales-Rentals-Air-Service-
Commercial Diving. 1505 S. George St.,
York, PA 17403 (717) 854-3133

SOUTH CAROLINA

The Wet Shop
PADI Certification-Sales-Service-Rentals-
Hydrostat-Air 5000 PSI. 5121 Rivers Ave.,
Charleston, SC 29405 (803) 744-9276

Carolina Divers Center, Inc.
Air-Rentals-Sales-Trips-Two 20' boats-PADI-
YMCA Instruction-Commercial work.
North Kings Rd., Greenville, SC 29601
(803) 277-8550

Divers World Scuba Diving School
NASDS-PADI Pro Dive Store-Instruction-
Tours-Sales-Service-Rentals-Wreck Diving
Tours. 3303 1/2 Augusta Rd., Greenville, SC
29605 (803) 277-8659

TENNESSEE

Neptune Equipment Corporation
"Your Complete Dive Shop"
2610 Franklin Pike, Nashville, TN 37204
(615) 383-8565

TEXAS

Underwater Sports & Equipment Co.
Equipment: New & Used-Rentals-Air Refills-
Lessons. 10634 Ferguson Rd., Dallas, TX
75228 (214) 270-9640 Hours 10:30 to 5:30

Skindiving Schools of Fort Worth
Divers Equip. & Sup.-Pure Air-Sales-Serv.-
Repair-Rentals-Dvg Systems-Resort Travel-
Salv. 3807 S.W. Blvd., Ft. Worth, TX 76116
(817) 732-5761

Aqua Treck, Inc.
YMCA-NAUI-PADI Professional Instruction-
Sales-Service-Trips-Planning. 804 University
Blvd., Galveston, TX 77550 (713) 763-0456

International Scuba Ventures (Texas)
Complete dive trips-Individual or groups-to
Cozumel, Caymans, Cuba. 2223 Strawberry
Mall, Pasadena, TX 77502 (713) 477-0236 or
1-800-321-6760, ext. 41

Diver's World Inc. (N. Dallas)
Major Brand Sales-Repairs-Scuba Tours-
Rentals-U/W Photog-NAUI Inst.-Zodiac
Inflatable Boat. 632 S. Central Exprwy.,
Richardson, TX 75080 (214) 231-9865

VERMONT

Northern Divers, Inc.
"A Professional Dive Shop"-NAUI Inst.-Sales-
Rental-Repair-Commercial.
Burlington, VT (802) 862-3881;
St. Albans, VT (802) 524-4097

VIRGINIA

Dad's Dive Den
Equipment Rentals-3000 Air Fills-Repairs-
Testing-Inst. RFD 2, Box 211, Charlottesville,
VA 22901 (804) 296-1319

W & W Dive Shop
Sales-Service-Air-Rentals-Hydros-Visuals-
YMCA-PADI Inst. 7403 W. Broad St.,
Richmond, VA 23229 (804) 282-2852

WASHINGTON

Silent World Divers, Inc.
Travel with NASDS Professionals. Inst.-
Equipment-Service. 14444 S.E. Eastgate Way,
Bellevue, WA 98007 (206) 747-8842

Washington Divers
Washington State and British Columbia.
Diving tours-Resort and Charters. Dive
Northwest. 932 N. State, Bellingham, WA
98225 (206) 676-8029

WISCONSIN

3 Little Devils Scuba Dive Shop
Sales-Service-Lessons-Air to 4200 PSI-North
entrance to Devils Lake. Rt. 4, Hwy. 123,
Baraboo, WI 53913 (608) 356-5866

Fontana Army-Navy Store, Inc.
Air-Instruction-Sales-Rentals-PADI Training
Facility. Hwy. 67, Fontana, WI 53125
(414) 275-2220

AUSTRALIA

Cairns Barrier Reef Divers
Sales-Service-Air-Equip.-Rentals-Diving Inst.-
Super Dive Trips! 47 Shield St., Cairns,
Australia 4870 Aust. (70) 511889

Heron Island Dive Shop
Complete Barrier Reef Dive Facility. Trips-
Air-Sales-PADI Instruction. Heron Isl. via
Gladstone, Qld. 4680 Australia, 781488
Telex 49455

BAHAMAS

Underwater Explorers Society
(UNEXSO) World Famous Facility! Blue
Holes-18' deep pool-Photo lab-Chamber.
Box F2433, Freeport, Bahamas
(809) 373-1244

CANADA

Points West Diving Ltd.
1073 Roosevelt Crescent
North Vancouver, B.C. V7P 1M4
(604) 980-6501

Colombia! New! Unbelievable! Superlative!
Dive: San Andres, Colombia-enquire about:
Rates, Wall Dives, Lobster Hunts, Excellent
Photography. Scuba Consultants - 613-226-
1207; 1372 Clyde Ave., Ottawa, Ontario,
Canada

Dive Tobago! Heaven's Dive Paradise on
Earth. Off the beaten track into a new world.
Group rates; we cater to clubs. Scuba
Consultants: 613-226-1207; 1372 Clyde Ave.,
Ottawa, Ontario, Canada

Scuba Consultants: 613-226-1207
Canadian Distributor for Cressi-Sub. Enquire
about Fenzy and Dive "T" Shirts. Enquire
about "Dive Tobago" and "Dive San
Andres". 1372 Clyde Ave., Ottawa, Ontario,
Canada

Scubanautique Limited
NASDS-Full Service Pro Store/School-
Scubapro, SAS, Seapro-Carib tours-
Photography - Don S. Bruce.
5791 Tecumseh Rd. E., Windsor Ontario,
Can. N8T 1E1 (519) 948-7171

DOMINICAN REPUBLIC

Aquaventures Diving Tours S.A.
Pro Dive Shop-PADI training facility-Dive
tours-Individual and group-Wrecks-Offshore
diving-Deep sea fishing. P.O. Box 1816, Santo
Domingo, Dominican Republic 566-7608

HONDURAS

Roatan Lodge, Bay Islands, Honduras, C.A.
Beachfront Resort at Port Royal Harbour
Great diving moments from your bungalow
Good walls, caves, wreck and night diving
Fine food, Private airstrip, Group Rates
Port Royal Harbour, Isla Roatan, Rep.
Honduras, C.A. Cable Proofa

MEXICO

International Scuba Ventures (Mexico)
Complete dive packages-Individual or group-
U.S. reservations. Hotel Barracuda,
Cozumel, Mexico 20002
Texas — 1-800-392-4303, ext. 41
Other States — 1-800-321-6760, ext. 41

Galapago-Inn Dive Resort
New Divers Headquarters in Mex-Caribbean-
Full SCUBA, U/W Photo-Trips & Group
Pkgs.; P.O. Box 289, Cozumel, Q. Roo,
Mexico; Ph. 20627

PHILIPPINES

Aquaventure Phils., Inc.
Dive Resort/Tours* Equip. Sales-Repairs-Air-
PADI Inst. #1 Space 701, Aurora Blvd.,
Quezon City, Philippines; #2 908 Pasay Rd.,
Makati, Rizal, Philippines T-79-86-48

RED SEA

Lucky Divers-Eilat Scuba Center, Ltd.
YMCA-PADI-CMAS courses-Daily tours-
Safaris-American gear-Jet Ski rental-The best
way into the Red Sea since Moses.
Moriah Hotel, Eilat. On the Red Sea.
Tel. 059-5749

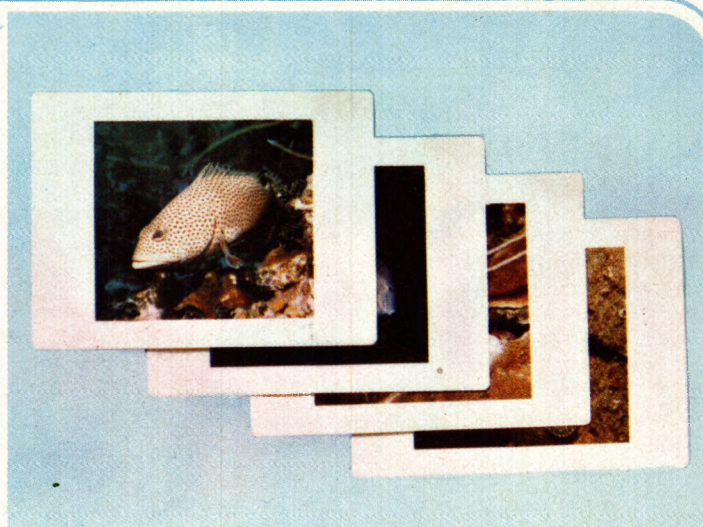
VIRGIN ISLANDS

Caribbean Divers
Dive & Snorkel Tours by Boat-Inst.-Sales-
Service-Rental-Group Rates-Accommoda-
tions-Fresh Air-Red Hook, St. Thomas, Virgin
Islands 00801 (809) 775-1935

Virgin Islands Diving Schools & Supplies
V.I.'s Most Complete Diving Facility
Tours & Classes for Beginners & Advanced.
Air-Sales-Service-Rentals-Photography.
Box 9707, St. Thomas, U.S.V.I. 00801
(809) 774-8687

Placemats: "SPLENDOR ON A CARIBBEAN REEF"

Three distinctive sets of four placemats,
laminated for long life. Each one
features a handsome undersea photo
by award-winning photographer,
Feodor Pitcairn. The perfect gift for
anyone who loves the ocean and its
inhabitants.



FeoPhoto, Inc. Jenkintown Plaza—Sixth Floor
Jenkintown, PA 19046

©FeoPhoto Inc. 1978

PLEASE SEND:

- ☐ ___(No.) set of four placemats at \$15.95*...Set I Shy Hamlet; Stove Pipe Sponges; Gray Angelfish;
Nassau Grouper
☐ ___(No.) sets of four placemats at \$15.95*...Set II Queen Angelfish; Azure Vase Sponge; Squirrelfish;
Trumperfish
☐ ___(No.) sets of four placemats at \$15.95*...Set III Red Hind (shown above); Banded Butterflyfish; Peacock
Flounder; Blue Tang
☐ Check or money order enclosed *Add \$1.50 for foreign orders; PA residents add 6% sales tax.

Name _____
Address _____ City _____ State/Zip _____

HAWAII'S MOST SPECTACULAR SPORT DIVING CRUISES!



- New, million-dollar diving vessel
- Luxury, live-aboard accommodations
- Economical, all-inclusive packages
- Parties • Gourmet food and wines
- Ultra-modern equipment • Previously inaccessible dive spots • Experienced crew



Call or write for FREE COLOR BROCHURE
4104 E. Anaheim St., Long Beach, CA 90804
(213) 433-7485

Learn what's new
in women's equipment
in the next issue of
Sport Diver.



ADVENTURE CRUISES

The beautiful crystal waters of the Bahamas are just a few steps away from your bunk when you ship on an *Adventure Cruise* aboard the *Highlander IV*. 10, 7, 5 and 3-day cruises as well as charter services are available on this 60-foot luxury yacht. Designed, built, crewed and skippered by divers. The *Highlander IV* offers:

- scuba and skin diving gear
- unlimited air refills
- underwater guide service
- full beam diving platform
- built-in air compressor
- air conditioned salon and staterooms
- 3 full baths with showers, full galley, 3 meals daily

Sign on now for the Bahamas cruise with the most diving!!

Write or Call:
**CAPTAIN GARY
ADVENTURE CRUISES, INC.**
P.O. Box 22284-S
Ft. Lauderdale, Florida 33316
Phone: (305) 735-4045

PHOENICIAN SHIPWRECKS

continued from page 122

was only with great difficulty that we were finally able to rent a small boat.

After plying the fisherman whose boat we rented with a staggering amount of the local brandy, we got him to take us to an area where he had snagged and raised several amphoras in his nets. He placed us right on top of a Roman amphora wreck dating from the first century A.D. Unfortunately, he had also shown others the site, probably the sponge divers. Where once there were thousands of intact amphoras, there are now only thousands of sherds because someone, trying to dislodge the amphoras from the coral growth holding them, has used dynamite on the side.

Half of the town's inhabitants were waiting as we came ashore with our finds that day, and our poor fisherman bore the brunt of angry remarks for having shown us a good area and helping us find artifacts. We spent the following three days with the same fisherman, who professed to know many other sites with ancient objects, but all we found were several Phoenician stone anchors which have no value to the local people. We realized that he had been deliberately taking us to areas where he was certain nothing would be found in order to keep his good standing in the community.

When we reported this to Emir Chehab, he arranged for one of the men on his excavation team who had a small boat to work with us. Our first goal was to survey a large area near the southern harbor where the Emir believed that a number of vessels had been lost during the siege of Alexander the Great. After a visual search which only produced a few pieces of pottery and one large lead Roman anchor stock, Kelley and I used long metal probes to locate solid objects buried under the deep sand. In four different areas we located what we feel certain are shipwrecks.

We then began searching visually again, this time closer to shore inside of the southern harbor and made one exciting find after another. The bottom was almost paved with artifacts, of which we recovered samples for study by the Emir and his staff. When the local seadogs learned that we were recovering important objects without their help, they resorted to drastic action. Many of the fishermen used dynamite to kill fish, and we soon found

that some of them were always near whenever we were on the bottom; they were soon dropping dynamite to discourage us. When we moved on to a new site, so did they.

We started off our last day at Tyre using the metal probes to determine the depth of sand and mud in the center of the southern harbor. After about two hours on the numbing cold bottom, I accidentally touched a poison scorpion fish. I had to surface immediately because of the severe nausea I felt. While recuperating in the boat, I saw Kelley surface. He reported that his probe had struck something solid six feet beneath the sand. By this time he was out of air and too cold to go back down, so I went back in although still dizzy and on the verge of vomiting. I loosened Kelley's probe which felt as if it had been stuck in wood. Digging by hand in loose, powdery sand is no easy task, and after an hour I had only been able to dig a small hole about three feet deep.

Kelley then rejoined me, and we finally reached a depth of four feet, where we uncovered several Phoenician amphoras which our archaeologist quickly dated to the fifth century B.C. While widening the hole and uncovering more amphoras, I suddenly spotted three clay figurines, ranging in size from 5 to 13 inches in length. Nearby I found two more and brought them to the surface. The two archaeologists were ecstatic; their excitement was boundless when Kelley came up with two more. The statuettes we found are identical to those found at Shavei Zion in Israel; the two sites are only about 15 miles apart. The figurines represent the goddess Tanit with her right hand raised in a gesture of blessing and her left hand either over her breast or holding baby, and two of them show her pregnant.

Our air was almost depleted, and the sun was already fading on the horizon, so I made one last brief dive. Forcing my hand as far down in the deepest part of the hole we had dug, I felt hard wood, which to me was far more important than anything else we had found during our stay in Lebanon. Only a complete excavation of this site will reveal if we found only a small section of the hull or a greater part of the wooden remains of a Phoenician ship that once plied the Mediterranean.

Our trip was more than we had bargained for. We had come to Lebanon to study the feasibility of locating ancient shipwrecks, never thinking we'd find so many artifacts. Lying dark and silent under the sand and mud of Tyre, Sidon and Byblos there must be hundreds of ancient shipwrecks awaiting discovery; waiting to tell us the ancient story of a courageous maritime culture. ☪



Dive with the world's leader.



Nemrod is the oldest and largest manufacturer of underwater equipment in the world.

So what? So that means our equipment is so good that it's used by more amateur and professional divers than any other. In fact, Nemrod skin diving and SCUBA equipment is sold in over 50 countries in North and South America, Africa, Europe, Asia and Oceania.

Worldwide leadership in design and engineering has made us Number 1. For more information, ask about U.S. Nemrod in your local dive shop, sports store or sporting goods department. Or send \$ 1.50 for the U.S. Nemrod catalog.

And dive with the world's leader.
U.S. Nemrod, Inc. 2315 Whitney Ave. Hamden, Ct. 06518



♪ BINGLE JELLS ♪



For the diver in your life — an Aquadive® watch is the perfect gift — the only piece of dive equipment you "never" take off . . . it identifies you as a diver everywhere. Select the model of your choice, from the rugged and practical electronic Time/Depth with a built-in depth gauge, to the sophisticated electronic digital Maritime. At your nearest dive shop.



Use Numbers When Ordering

AQUADIVE 3600 Wilshire Blvd. • Los Angeles, California 90010 • Dealer Inquiries Invited *Trademark NAC Sales Inc.